Pulp and Paper Prices Advancing

SLOWLY but surely the paper trade in this country is heading into a more prosperous era. The evidence of the turn was apparent immediately after the 4th of July, when a material and substantial increase in orders for paper of all grades was received by the mills. This reversal of policy came about primarily as a result of the long continued operation of the hand-to-mouth policy of purchasing.

For a year past, consumers and merchants have pursued the policy of buying only from week to week as current orders for small weekly requirements were received. Buyers and consumers of paper were afraid to stock up. The market appeared to be weak and sagging. The disposition was to get away from carrying any stock which might decline in price. The prevalent topic of conversation in commercial circles was the "rotten business conditions." Still lower prices were predicted, and the vote of "no confidence" in paper prices was almost unanimous.

But all this time the stocks in the hands of consumers, dealers and converters had been dwindling, reaching the vanishing point by the end of last June. The result was bare shelves and empty warehouses. In addition, the mills had adopted curtailed schedules, resulting in decreased production.

Then, too, the hand-to-mouth buying policy had extended back from the consumer to the retailer, and from the retailer to the wholesaler, from the wholesaler to the manufacturer, and from the manufacturer to the raw material supplier.

It took a long time, many months, to establish throughout the whole complex division of industry and commerce the hand-to-mouth buying program. But it finally, last spring, became an accomplished fact. Everybody did it. It was the national practice of an unnatural and uneconomic measure, born of disappointment and continued in despair.

In the meantime the political affairs of the country settled down, confidence in the administration at Washington rose, and Congress adjourned. Then the financial situation engaged attention because of the unparalleled strength and wealth of the nation, as demonstrated by the foreign and domestic underwritings, which were consummated with much facility and tremendous oversubscriptions.

European countries all got back on a gold basis; international relationships grew better and more profitable; and all raw material began to appreciate, especially those raw materials and luxuries which America must purchase from abroad. Rubber went skyward. Coffee hopped upon the highest perch it has occupied in years; silk up; jute, hemps, manila and all followed; and now diamonds are about to take a celestial boost.

Nor must we omit wood pulp fibers, some of which have risen steadily during the past twelve months, notwithstanding the fact that during all that time paper prices were weak and sagging. Yet pulp remained firm and actually rose in some cases 20 per cent. That one fact alone ought to make any thinking member of the paper trade sit up and take notice.

Then the inevitable came to pass—a good high priced agricultural crop came to maturity some three weeks earlier than usual in this country. The farmers found themselves in possesion of another prosperous harvest. The agricultural index commodity figure, which in 1922 was 108, in June, 1925, was 147. The farmer has staged a comeback—a good one, too!

Presto! The consumer began to buy in larger quantity, then the retailer began to wake up; the wholesaler is still dallying with the situation, but he will be in strong ere long, running for cover. Then the mills will become convinced that this is no temporary splurge, and finally the raw material men will feel the additional demand, and prosperous times throughout the entire industry will prevail. There is the picture at present.

The revival has started. Some mills have already raised their prices 5 to 6 per cent; others are timorously withdrawing, expecting to raise shortly. Bleached sulphite has gone up a full $2.00 per ton ex dock New York in the past two weeks. Sulphates are strong as bull beef, and no offers for sale from Scandinavia of either bleached sulphite or good sulphates are in hand.

The stage is well set. Stacks of finished paper abnormally low; demand on the material increase; general business large, healthy and expanding; prices of paper still too low; raw materials higher and bound to shoot up at the first appearance of anything approaching a normal demand.

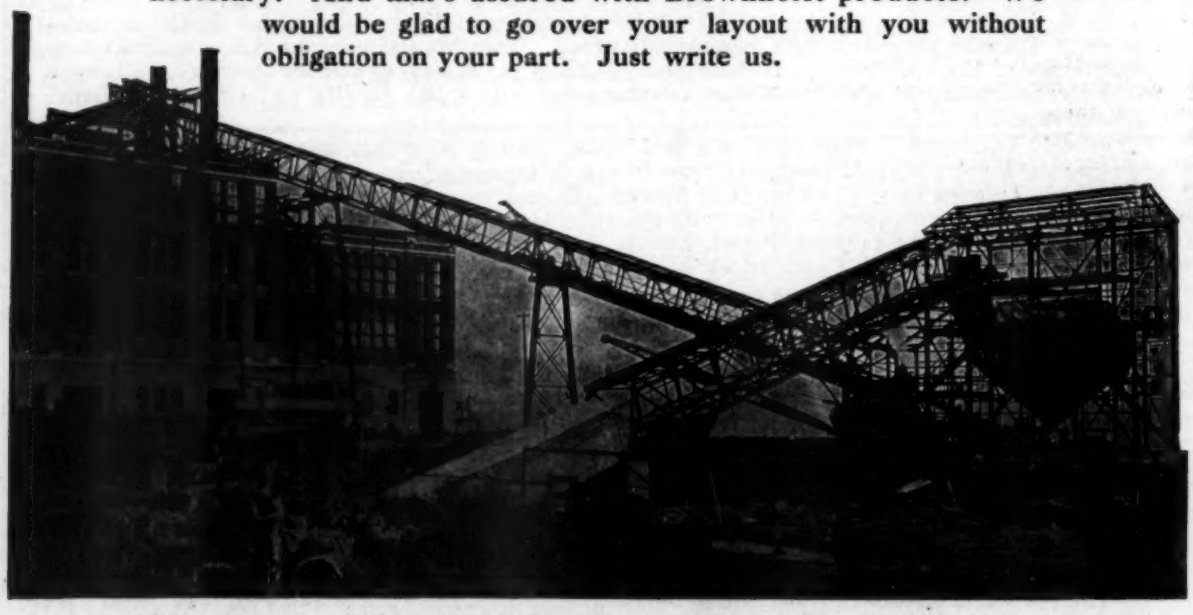
What better outlook could one desire for profitable operations? This is the beginning of a prosperous era for the pulp and paper industry. Action and reaction are equal in mechanics and physics, and also markets. We have had a period of about eighteen months of repression. We shall now have a like period of prosperous expansion. The latest items of good news are that royalties on Canadian woodlands are raised, foreshadowing an immediate upturn in paper and pulp prices in that country, and last but not least the lowering of the Bank of England discount rate from 5 per cent to 4½ per cent, telling of increasing easiness in European finances and of a better and more prosperous era abroad.

Coal Handling At The New Riverside Station Of The United Light and Power Company

The United Light and Power Company, operating eighteen to twenty central stations, has the opportunity of determining the equipment that gives the longest and most economical service. It is, therefore, a significant fact that in equipping their new Riverside Power Plant at Davenport, Iowa, a complete Brownhoist handling equipment has been installed.

Many power plants, large and small, know the dependability of Brownhoist locomotive cranes, conveyors and bunkers for handling their coal and ashes. And if you have a boiler room handling need, you can't go wrong with a Brownhoist product.

As the power plant is the point where real economy of operation must begin, the handling equipment that will effect the greatest saving is necessary. And that's assured with Brownhoist products. We would be glad to go over your layout with you without obligation on your part. Just write us.



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BROWNHOIST

GOOD MATERIAL HANDLING MACHINERY

Editorials

Observations of a Traveler—III

EVERYWHERE one goes among the pulp and paper mills of central and northern New England, especially in Maine, the question of fuel for power plants is uppermost. The introduction of crude oil as a source of power was welcomed at first, because oil promised to be vastly cheaper than coal as fuel, and it does have many advantages when the supply is normal. By its use firing is simplified and labor costs are lessened. At the same time smoke and cinders are eliminated, something which is greatly to be desired in the operation of a pulp and paper plant. Recent increases in the price of fuel oil, together with expected scarcity of supply, has, however, led to a reconsideration of the benefits likely to accrue from its use. Its possible disadvantages are getting more attention, so that a halt has been made in new installations of oil-burning furnaces and some mills have actually abandoned the use of oil and gone back to soft coal.

The importance, nay the necessity, of studying all factors entering into the economical generation of power, in these times of high manufacturing costs, has been impressed on mill executives as never before, and improvements in boiler room installations are being made constantly. In one boiler room, it may take the form of new boilers and stokers, or auxiliary equipment, as observed on a visit to the Groveton Paper Company's mill at Groveton, N. H., where two modern boilers are now being made to do the work of six old-type installations; or, as in the Lisbon and Pejepscot mills of the Pejepscot Paper Company, Brunswick, Me., where pulverized coal is used at a considerable saving of labor over hand-firing or underfeed stoking. Smokeless combustion is achieved and there is less residue in the burning of pulverized coal than seems possible with any other method of using that fuel as a generator of steam. There must be an extraordinary completeness of combustion to account for the negligible amount of ash of such fineness and freedom from slag as was observed on an adjacent ash pile at the Lisbon plant of the Pejepscot Paper Company, where there is an installation of the Lopulco System of the Combustion Engineering Corporation for pulverizing and firing coal.

Pulverized Coal System of Pejepscot

Great satisfaction was expressed by the engineer in charge over the working of this system as well as with the operation of a Unit System of the Erie City Iron Works at the Pejepscot plant in Pejepscot, Me. It was easy to share the enthusiasm of the management over the cleanliness and economy of operation. At the Lisbon plant, one man was attending to the firing of the furnace and care of the boilers while another on the outside of the building was feeding the rough coal to the pulverizer. The saving in labor costs will be obvious.

After being crushed to the proper size and freed of stray pieces of iron by passing over a magnetic separator, the coal is fed direct to the pulverizer where it is reduced to an impalpable powder and lifted by a current of air, developed by a fan which is an integral part of the pulverizer, to a point high above the furnace into which it is blown with a regulated amount of air to assist in its complete combustion. So intimately mixed is the pulverized coal with its vehicle of air that it enters the furnace practically as a gas. A week's combustion of coal yields no more than a wagon load of ash in which there is no trace of clinkers or slag, surely convincing evidence of complete exhausion of the combustible constituents of the coal, when taken together with the absence of smoke from the chimney stack.

Power development and control bulk largely in the work of the Pejepscot Paper Company, which in its operations on the Androscoggin River has acquired title to waterpower used for manufacturing purposes and now owns all the capital stock of the new Androscoggin Water Power Company.

Leaving the subject of power plants—which is undeniably of great importance when it is considered that in the operation of pulp and paper mills, power including steam is the heaviest burden of expense outside of raw materials—some disappointment was experienced in noting the equipment of a few of the larger mills of central New England.

This has reference to an apparent neglect of what may be considered novelties in control apparatus for maintaining uniformity of stock before and after it has been screened, and the employment of devices for getting increased and better service from wires and felts, all of which prevent loss of time and lessened production from breaks in the sheet.

Splendid Performance at Algonquin

At the mill of the Algonquin Paper Company, Ogdensburg, N. Y., where newsprint paper is made on a single machine at the rate of 97 tons a day steadily over a period of 30 days, at a speed varying from 810 to 1,000 feet a minute, the sheet trimming 198 inches, it was no cause of astonishment to learn after noting the character of equipment and the care with which freeness tests are made of the pulp, both at grinder pit and decker, that a week's run of paper without a break was not unusual and that as much as 106 tons of paper was turned out daily at intervals, 97 tons being the average over a period of one month.

On the Saturday afternoon of our visit to this mill, the machine was running at 810 F.P.M., when suddenly came an order to reverse the second press felt and the sheet was broken while the change was made. The operation was timed and it took exactly eight minutes to turn the felt and start the sheet

Choosing the Right Lubricant

THE problem of selecting the right lubricant for specific conditions is a complicated one. It is doubly so, because the harmful or wasteful effects of the wrong lubricant are not immediately discernible. It is the wise thing, therefore, to entrust the specification of oils and greases to lubrication experts who make this their sole business. Such a course prevents unnecessary replacement expense later on and reduces to a minimum the power waste due to friction.

Standard Oils and Greases

properly specified, give the maximum efficiency of lubrication. That you may be absolutely certain of using the most efficient and most economical lubricant in every case, the Standard Oil Company (Indiana) maintains a corps of lubricating engineers to give you expert advice on lubrication.

These men have years of practical experience back of them and, in addition, are thoroughly familiar with the characteristics of Standard lubricants. Their entire time is spent in the field studying, observing and recommending the right lubricant for the right place.

The recommendations of these experts will cost you nothing, but they will materially help you in determining the most efficient lubricating oils and the most economical oiling methods for your particular requirements.

Make use of this service. A 'phone call or letter to our nearest branch will bring one of our engineers

STANDARD OIL COMPANY
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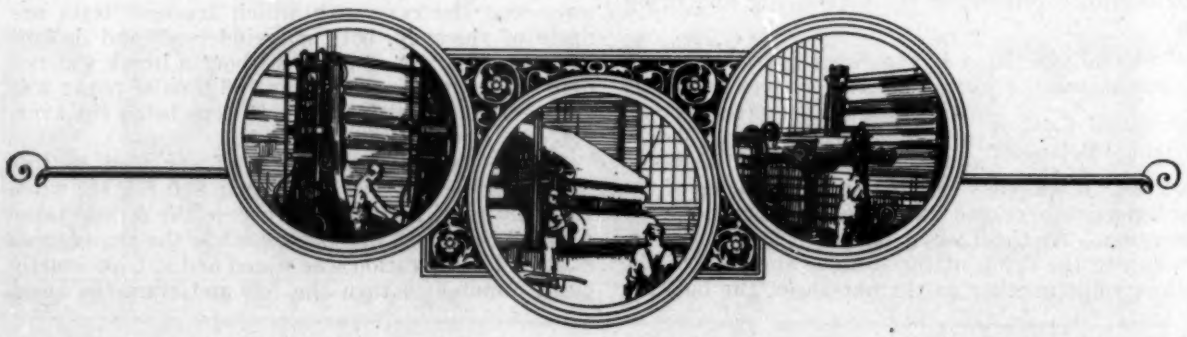
General Offices: 910 S. Michigan Avenue Chicago, Illinois



again on its way through the dryers to the winder, a rapid piece of work, considering the width of sheet and the speed at which the machine was running. The Voith stock inlet, Vickery felt conditioner and Sheahan carrier formed notable parts of the equipment. These and the care taken to make hourly trials of the groundwood by means of a freeness tester account for the fine performance of the machine which often runs for days at a speed anywhere from 800 to 1,000 feet a minute without a break.

Great Northern Holds Banner for Production

At the mill of the Great Northern Paper Company in Millinocket, Me., the average daily output of newsprint is 750 tons, which puts this mill at the head of its class, there being no other individual paper mill in the world with an equal production. It takes, however, ten machines to manufacture this quantity of paper daily, two of these being capable of running at 1,000 feet a minute or more. Then the trim is less, say 154 inches at widest. The Pope air device for carrying the web from press roll to felt and the Woodcock-Hall system of cleaning felts are features of the machines in use. These, with a Millspaugh suction roll, are notable aids to steady and rapid production. The Van de Carr slice and Eibel pitch of wire are favored at the Great Northern mill.

As is the case in some of the larger pulp and paper plants in the northwest, the Great Northern Paper Company maintains an accident ward or miniature hospital to which workers in any department of the pulp or paper mill can resort for the treatment of minor injuries and advice in sickness without charge. A doctor and a trained nurse are in attendance at certain hours. The company deserves every praise for putting facilities of this kind at the service of their employees. The building and equipment for medical and surgical relief would do credit to any metropolitan hospital and one could not help but be impressed with the general air of surgical efficiency and true appearance of solicitude for the afflicted that prevailed in this first-aid room, an annex to the mill that is equipped in every respect to give adequate care and treatment in accident cases.

Mention was made in a previous note of the production of strong bleached sulphite pulp for conversion into rayon. The bulk of this pulp is made at the South Brewer mill of the Eastern Manufacturing Company and at Hawkesbury, Ont., by the Riordon Corporation, but large quantities of the pulp are imported from Sweden.

Brown's High Quality Bleached Sulphite

A bleached sulphite pulp of remarkable purity is made by the Brown Company at the Cascade mill, which is located half way between Berlin and Gorham in New Hampshire. It is called alpha cellulose and is used wherever a pure rag fiber is indicated, as in the manufacture of true parchment paper and fine bonds. Unless prohibited by price considerations, this pulp should find application in the artificial silk industry, seeing that it represents a pure form of cellulose. There are few industrial plants of its kind where the raw and finished materials are subjected to so many exacting tests for the maintenance of standards of strength and purity as at the Brown Company mills, where every known scientific device is used to regulate and control cooking and bleaching operations and to maintain uniformity of product.

Hot Weather Advice

BUSINESS conditions during ordinary years generally let down during the hot season of the summer, and this year is no exception to the general rule. However, all indications point to a big volume of business this fall which, we believe, will put the year 1925 equal to, if not ahead, of 1924—and 1924, surprising as it may seem to many people, was a much bigger and better year for business and industry in general than the so-called boom year of 1920.

It would therefore seem advisable that all paper manufacturing plants be put in first-class shape for the big business that is bound to come. The next few months offer splendid possibilities for this purpose during the present lull. One of the best summer tonics for the heads of industrial plants is to apply their time to the subject of improvement during this season and every department head should be asked to submit an answer to the question as to what suggestions they have for increasing the efficiency of their department and its processes during the coming season.

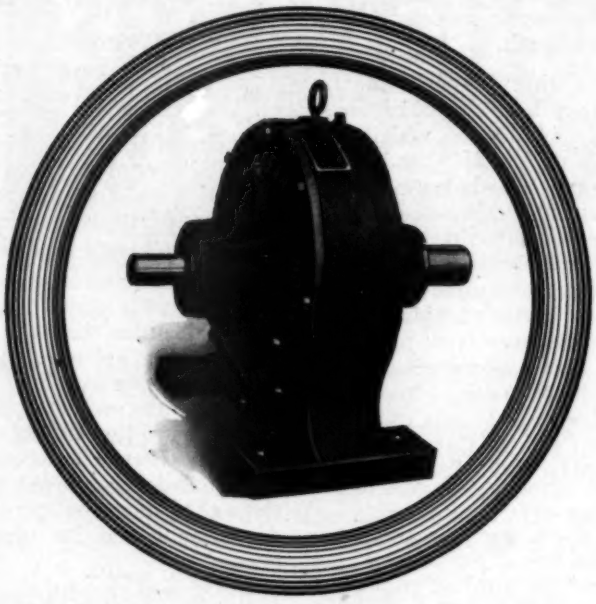
Not only will such requests bring out usable and helpful information but it will put each department head on his mettle and perhaps get him out of the hot season rut. When we go home at night that they may learn, we encourage our children to ask plenty of questions, and it might be well for us grown-ups to remember that we can learn something ourselves by the same process.

This publication is full of real helpful information for every paper and pulp manufacturer, and a little more careful reading of it during the summer months might suggest something that would be very helpful in increased production during the coming fall and winter season when it would seem that all plants will have plenty of orders on hand.

Never before has specialized knowledge been so essential to the successful operation of paper and pulp mills. The old time, hit or miss, back-breaking method is rapidly giving way to scientific methods. This places a greater premium than ever on intelligent effort, but knowledge such as this is acquired only by close application to the job in hand and by constant reading and studying and applying that which seems to be good. Many things that are good today will be of no good whatever tomorrow, and in order to produce paper at the cheapest possible price, we must keep abreast of the times. A close reading and study of what is going on, what other people are finding out, is going to be helpful to every paper and pulp manufacturer to produce a better sheet at a lower cost than ever before.

Now is the time to begin this campaign to cut down costs, cut out waste and improve methods, even though you are not overrun with orders today.

Inherent Quality



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THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

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Increasing Utility of Paper in the Food Industries

Outlets Increasing in Number and in Variety of Purposes

By Henry Hargis

WITHIN the past decade, the food service industries have found scores of uses for paper products of various kinds and considerable impetus has been given this movement only in the past few months with the adaptation of a practical paper plate service, which is now on the market and which represents, probably, the greatest amount of experiment in manufacture yet attempted in this direction. The paper drinking cup was only a forerunner of what was to come, and we now have in production by paper specialty houses paper table covers which are serving a useful purpose in restaurants and lunch rooms as well as in institutions where large numbers of people are fed at a low price.

The utility of paper for food product packaging is a matter of growth over a period of years; but the wider use of paper as a base for food service facilities is comparatively new and a great many barriers have arisen to hold back a more rapid and fuller development of the idea.

The successful production of the paper lunch plate, with its various compartments, was prolonged over a considerable period of time, owing to the difficulties met in getting a base impervious to water and grease, or practically so, and in pressing out the indentations in a way that they would stand up when in use.

Many of the larger paper manufacturers are watching the widening utility of certain classes of paper stock in the food service and food product fields, and whereas this always has been as a drop in the bucket to the more general uses of paper stock, it has shown promise of becoming a major one as experiments proceed.

Of course, at the bottom of all of this hectic experimentation in the food service industries, there is the crying need for sanitation on the part of the public and for a more economical service on the part of the food service people themselves. The paper cup, now in general use in the food service industries, has almost reached a point of market saturation, and from now on can probably only look for a normal increase in demand. But new uses for paper bases in this line of activity are widening so rapidly that the production of paper cups already is rivaled by the manufacture of paper napkins, paper "cloths," paper compotes, paper spoons and paper towels.

The ordinances in most cities today make certain demands upon soda fountain operators and their employees as to sanitation, sterilization of glasses and spoons being required in most cities after each service. This vastly increases the labor required in service and makes necessary a considerable investment in sterilizing equipment. So the dispenser has turned to paper products where possible in order to fulfill legal sanitary requirements and as a means of reducing his overhead costs.

It is the same with restaurant, cafeteria and hotel. The modern dishwashing machine doesn't sterilize effectively, and there is ample expert testimony to the effect that diseases are commonly transferred from person to person through the carelessly washed restaurant or hotel plate.

This has given the paper plate people an opening which they have been quick to take advantage of, and if the sterilizing process as regards dishwashers goes into effect generally, there will undoubtedly be a time when the American people will be fed daily off paper plates to a great extent.

There are certain drawbacks in the introduction of paper service that the industry will appreciate and

which it must allow for. The public doesn't immediately take to paper innovations in food service and therefore it has to be "sold" on each item that is added to the service. People are not yet used to eating off paper, but they are rapidly becoming used to it and it is as with paper cups earlier, just a question of time. Prejudice has to be broken down and it is being broken down.

One of the largest cafeterias in the country has gone in for paper lunch plates, with four impressions and reports that its clientele accepts it with satisfaction.

Parchments in Big Demand

The mills producing vegetable and other parchments are finding that in addition to the butter trade and the packing business, parchment will sell for cafeteria and lunch room table cover purposes, and one western mill has been pushing this idea for two or three years. A paper table cloth stenciled in beautiful design has been recently put at the disposal of restaurant keepers and tea room operators in New York, and with success.

When we come to the use of manila board as a base for "carry it home" service in bakeries, butcher shops, delicatessens, lunch rooms and soda fountains, the prejudice has long been broken down and an acquiescent public now prefers paper, whether it contain chop suey, ice cream or pickles!

Some mills producing stock suited to such needs are keenly aware of the possibilities of pushing paper service in the food industries as a possible future outlet of major magnitude. The attitude toward such trends in years past has not been of the most helpful on the part of the paper manufacturer who held skeptical ideas on the subject of the practical use of paper products as rivaling china, glassware and metals.

Whether experimenters are going to eventually get much help from the mills is a question.

It has been difficult, for instance, for food service people, as in tearooms, cafeterias and hotels, to satisfy their table guests with paper coverings, though the paper doilie has caught on apparently in the tea room trade and the public seems to rather like it, at least in New York. Extremely artistic effects are secured in design and coloring and the cost to the operator is vastly less than linen, what with laundering and mending, not counting losses over the year.

The Market as It Stands

Concerns formed to experiment with and produce new paper containers for the food service industries have been compelled, for the most part, to adapt paper stock already available for other purposes to the ends in view with the result that many failures bestrew the path of the inventor. With the gradual development of a paper service idea and a volume of production achieved, a special need often can be and is filled by the proper mill. On the other hand, quantity production becomes a prime necessity in the making of paper food service supplies, inasmuch as the seller must always have as a basis a saving in price over other basic materials in order to interest the buyer.

The patent office in Washington contains a good many paper food service ideas which never have been placed on the market and a good many of them are impractical and visionary, put out by persons who are not familiar with paper stock limitations. On the other hand, some of these are mostly in need of a proper paper stock base in order to serve a useful purpose.

Also any innovation in the way of paper service involves the design and manufacture of special machinery, which, in turn, means high capitalization in what is obviously a risky enterprise unless such capitalization is possible.

Paper stock itself is only a single item in the production of containers. Added to this, the production end requires both skilled labor and a high overhead during the period when the greatest sales resistance has to be met.

Nevertheless, the growing uses of paper stock in the food service and allied trades is surprising, and ingenuity may eventually offer the mills of the country an increased outlet here which is not to be underestimated.

It may be said that this branch of production will only touch a small number of paper production units as now constituted, and this may be true. But the very increase in the uses of paper service will likely give added impetus to production along these lines.

The Fi-Bo-Pak Container

AN INTERESTING outlet for some of the present paperboard overproduction—and a great potential factor, as development in the fruit and vegetable field progresses—is found in Fi-Bo-Pak, a patented container which is meeting increasing popularity with growers and shippers of perishable food products—fruits, vegetables and meats— as well as confections, nut meats, dried fruits, etc.

The Fi-Bo-Pak cover is applied with a steel band and metal seal which makes it a pilfer proof package which is substantial, distinctive, and has unique display value for the contents. It is like a box, but a box has at least five separate pieces, four sides and a bottom, while Fi-Bo-Pak has only one. It is true that Fi-Bo-Pak is built up of three pieces, but they are so laminated by adhesive and pressure that they become one. A box has joints where it can come apart, one at each corner where the sides are nailed together, and a long joint all the way around the edge of the bottom where the bottom is nailed to the

sides. Fi-Bo-Pak has no joints; where two sides come together, the material bends and continues without break or seam to form the next side. Where the side joins the bottom again, the material is continuous. It is as though the box were cast or moulded in one piece. That is the effect, though not the process.

Fi-Bo-Pak is strong. To be symmetrically strong, any structure needs more material in some places than in others. The strength in Fi-Bo-Pak is where it is needed. It is reinforced where the strains come. The thickest parts have five plies, the thinnest three.

Fi-Bo-Pak Containers

It is waterproof. After fabrication it is impregnated with paraffine wax which both waterproofs and increases the strength. It is tough. Some things are strong and rigid; if overstrained they break. Fi-Bo-Pak does not break; it yields but holds. An empty Fi-Bo-Pak bushel will withstand a 2,000 pound crushing pressure.

Fi-Bo-Pak nests when empty, a great storage economy, and due to its strength, tapering sides and ventilation holes, the boxes when packed can be stacked sixteen high, or to the ceiling, in storage. Wooden hampers, baskets and crates containing perishable foods cannot be stacked high; thus, Fi-Bo-Pak economies in cold storage space are so much greater than wood that some warehouses offer a reduced rate for produce so packed.

The consumer package idea is spreading in every line of industry; that is, a package that can be bought and carried home without parceling out the contents. Fi-Bo-Pak has demonstrated its value for this new use in the fruit and vegetable field. Last winter the Florida Citrus Exchange offered oranges and grapefruit in Fi-Bo-Pak, featuring the consumer package size, with the result that for many dealers the unit of sale was increased from six oranges in a paper bag to a customer to twenty-four or thirty in the original package to a customer. In New York City 4,800 boxes of oranges (containing two to three dozen each) were sold in two business days. This established a record in the sale of citrus fruit which was largely, if not wholly, attributable to the display value of a distinctive package.

The use of wooden boxes is decreasing, due to the decrease in lumber production, because it is constantly becoming scarcer and the price higher. Paper in its various forms is the logical substitute, and the Fi-Bo-Pak idea has thoroughly demonstrated its present success and its future potentialities in the food product field.

Getting Distribution for Free Service Materials

A STORY often repeated is of the gentleman who tried to give away ten dollar gold pieces on Broadway, New York. He had, as the tale goes, pretty hard sledding. That sophisticated stream of sidewalk traffic had no faith in "something for nothing." They could not see it, but they felt that, somewhere, there was a catch.

Of course, no one would give away ten dollar gold pieces!

When a paper manufacturer begins to distribute service material, costing, maybe, large sums to produce, and exceedingly valuable in itself for its possibilities of help for the recipients, he does not have an entirely smooth pathway. Of course, he can find people to accept the material as gifts. That is not enough. The right recipients are wanted; and it is desired that they accept the gift with genuine appreciation of its worth—so that they will use it.

A letter which has just come to this writer's desk from R. H. Byrum, vice-president of Sam T. Greene & Company, Denver, illustrates one way that a printer, working in conjunction with the paper house, can get quick distribution for free service material, to the right sort of people—desirable recipients being chosen in advance—and, at the same time can inculcate in recipients full appreciation of what they are getting.

Byrum, who handles the service department work of Sam T. Greene & Company—a department which has done unusual things in many direct mail ways—used an idea, the merits of which are well known to mail-selling advertising men, but which has been little used by the paper trade in securing the right sort of distribution for service literature. He used a letter conveying the appealing suggestion that the recipient was one of a favored list; only a limited number were made the offer; and in order to benefit, each individual reservation must be made at once.

This is the letter sent out by Byrum, processed—typewritten on the company's letterhead and signed by himself with pen and ink:

"Here is a valuable course in direct mail advertising free:

"You are invited to be one of the two hundred from our selected mailing list who will receive absolutely free a set of the Consumer Course in Direct Mail Advertising, written by Robert Ruxton and supplied through the courtesy of the American Writing Paper Company.

"This is a reading and reference course of twelve lessons, brimful of good, usable suggestions for the

advertiser who is out for more profits. Here are the subjects:

"The Master Salesman.
"Idols of Business.
"The Booklet.
"Print It and Mail It.
"Printed Salesmanship.
"The Follow-Up.
"The Competitive Struggle.
"Publicity Sidelights.
"Bridging the Gap Between Buyer and Seller.
"Reducing High Costs.
"The House Organ.
"Striking the Norm in Advertising.
(All in one package.)

"Robert Ruxton is an authority on the subject covered (the course originally sold for a good price by the author before it was secured by the American Writing Paper Company).

"YOU MAY HAVE IT FREE—Without obligation. There are no strings to the offer—providing your reservation is among the first two hundred to come in.

"Not necessary to write a letter—just return this one with the name of the person who is to receive the books. You'll miss a rare opportunity if your fail to reserve your set.

"Helpfully yours,
"SAM T. GREENE & COMPANY.
"R. H. Byrum.

"Send the set to..... without obligation."

A great deal of service material has been distributed to printers, and by printers to customers, without specific requests being received. Such procedure may be all right when the value of matter so distributed is small. When considerable money has been put into it, however, a letter idea such as used by Sam T. Greene & Company will preclude waste. Moreover those who receive the literature, you can put it right down, will use it to a far greater extent than if it had come to them in an ordinary manner.

Testing Anti-Frothing Materials for Use in Coating

By E. SUTERMEISTER

IN the article, Frothing and Pin Holes in Coated Papers, published in the June issue of THE PAPER INDUSTRY, mention was made of a method for testing the efficiency of foam reducers for use in coating mixtures. The present paper gives a brief description of the apparatus used and some of the results obtained with it. Credit for the method should be given to Dr. H. E. Williams, who worked it out during the course of investigations on coating processes.

The apparatus consists of a brass vessel mounted on a tripod eight inches high, the legs being so spaced that a flask or large beaker may be placed under the center of the container. The vessel is made of a piece of tubing five inches outside diameter and six inches tall. The lower end is closed by a cap in the center of which is inserted a ¾-inch nipple and quick opening valve placed as near the bottom as possible. To the top of the tube is sweated a 6-inch flange, and above this is a flat cover, which is fastened to the flange by four ¼-inch wing nuts and bolts. Both flange and cover are slotted to permit rapid removal of the bolts. On top of the cover is a yoke which forms the upper bearing of a shaft extending through the center of the cover and nearly to the bottom of the tube. On the lower end of the shaft is an ordinary propeller-shaped agitator, while its upper end is geared to permit of its being driven by a gear on a pulley operated by a belt from a horizontal shaft. The agitator in the first apparatus tried consisted of an ordinary double action egg beater, but this soon gave out and was replaced by the single agitator, with entirely satisfactory results.

With this equipment was used an Erlenmeyer flask which weighed 78.5 grams when empty and dry, and 441.5 grams when level full of water at 25° C. The principle of the process depends upon the fact that the more air emulsified with the coating mixture the less a given volume of it will weigh.

In making a test, the dry clay, paste satin white, water and casein solution, prepared with appropriate solvents, are placed in a pebble mill and turned until the mixture is complete. The foam reducer is then added and the mill revolved for a further ten minutes. After weighing a flask full of this mixture, 450 cubic centimeters of it are placed in the bowl of the apparatus and whipped with the agitator at moderately high speed for just four minutes. At the instant the agitator is stopped, the valve is opened and the flask filled full of the whipped mixture. The foam above the top of the flask is struck off with a spatula and the flask and contents weighed. For comparison with these results, a test is made in the same way and with the same materials except that no foam reducer is added.

This method of testing was not worked out with the idea of establishing a standard equipment or procedure for the whole industry, and it is obvious that any number of modifications of the apparatus could be devised to do the work equally well. Even if the

apparatus should be standardized, it is hardly to be expected that the details of the testing method could be, for each coating plant would want to work with formulas and under conditions most nearly duplicating its actual methods of operation. It is not to be expected, therefore, that the results obtained in different laboratories or coating plants could ever be compared with each other, but tests in the same apparatus, and under the same conditions, should check reasonably well. In fact, it has been found that the instrument gives valuable indications of the tendency to foam of various mixtures and of the foam-reducing power of materials which are supplied for that purpose. It is a very difficult thing to establish the value of a foam-reducer in the coating plant because of the many things which may affect its working, but so far as can be determined by careful observations, the apparatus described does give results which indicate quite closely how a given material will work in actual practice. It will at least enable one to separate proposed materials into two classes, those which are so poor as to be obviously worthless, and those which are promising enough to justify a practical trial. This alone is a justification of the method, for without it the paper coater must either try a lot of useless materials at the risk of damage to his product, or else take the chance of overlooking something which is really good.

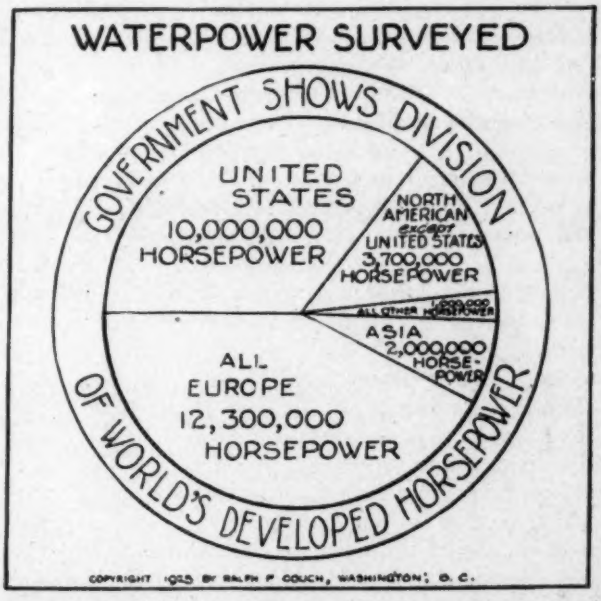
From the various tests made with the original apparatus using the egg beater agitator, the following results have been selected as showing the values obtained with some of the foam reducers. All results are the weights of the standard volume of coating mixture after whipping, and the quantities of foam reducer given are all based on the same weight of coating mixture. In interpreting these results, it should be remembered that the higher the weight of the standard volume, the greater is the efficiency of the foam reducer.

Reducer used, amount and kind.	Weight of standard volume in grams.
None	196.5
8 grams Vegetal	236.0
16 grams Vegetal	246.5
32 grams Vegetal	291.5
8 C. C. Benzene	212.5
8 C. C. Soluble oil	193.0
16 grams Zavon	235.5
16 C. C. Penetrol	226.5
8 C. C. Sulphonated oil	296.5

The following table gives the results of additional tests made with the modified apparatus with the propeller agitator. This table also gives the weight of the standard volume of coating mixture after mixing in the pebble mill and before whipping:

Kind of Reducer.	Weight of standard volume in grams. Mixed.	Whipped.
None	307.0	242.5
Vegetal	406.5	279.2
Turkey red oil (L)	328.5	270.5
Turkey red oil (2)	391.5	298.0
Soluble oil	377.0	299.0
Soluble tallow	443.3	337.0
Pine oil	446.3	413.0

It is seen that the two series of weights do not run parallel, but it is not yet known which is more indicative of the results which may be expected in actual practice. In any case, it is very obvious that the method of testing shows up variations caused by different foam reducers, and it has been proved by further experiments, which are not recorded here, that it can be used to study the effect on foaming of different solvents for casein, different combinations of mineral matter, etc.



THE developed water power in the world is about 29,000,000 horsepower, according to a study made by the United States geographical survey. Of this the United States has about 10,000,000 horsepower, or 35 per cent of the world total. This is more than any other individual country. However, the total of Europe as a whole surpasses the United States with about 12,300,000 horsepower developed.

In Europe, France has the largest developed water power capacity, with 2,100,000 horsepower. Norway and Italy have about 1,800,000 horsepower each.

In recent years Europe has developed water power faster than the United States. This has been forced by the high price of coal in many European countries.

In the United States about nine-tenths of the developed water power is in plants of 100 or more horsepower capacity and the remainder in smaller plants.

In the United States undeveloped water power is estimated at 35,000,000 horsepower and in Canada 18,250,000 horsepower. Africa has undeveloped power estimated at 190,000,000 horsepower, the greatest in the world.

Rosin and Relation of Its Analysis to Practical Size Making

By GEORGE F. KENNEDY

THE resinous exudations from various species of pine trees, such as the Longleaf Pine (Pinus Palustris), Cuban or Slash Pine (Pinus Heterophylla), Shortleaf Pine (Pinus Echinata) and the Loblolly Pine (Pinus Taeda), are subjected to distillation to drive off and recover the volatile hydrocarbons. These volatile hydrocarbons are known as turpentine oil or "spirits of turpentine."

When the crude resinous exudations or oleo-resins (for they are mixtures of the resin and the essential [volatile] oil of the tree) are refined in this manner, after removal of the volatile spirit, a solid residue is obtained which represents the resin originally combined with the turpentine to form this semi-liquid mass of the original exudation. This resin is known as rosin or colophony. The distinction between resin and rosin should be carefully noted. Resin is the generic term applied to all the solid resinous substances of this nature. Rosin is the particular resin obtained from the exudation of the pine after extraction of the turpentine.

The rosin obtained in this manner is called gum rosin in contradistinction to wood rosin, which is the solid residue that remains after extraction with volatile solvents and subsequent distillation of the residual resin in the wood of those portions of the tree which have no value as lumber.

Rosin comes into the market in the form of large pieces, generally homogeneous, varying in color and transparency; the best quality is known as "window glass" rosin, and is pale amber in color, perfectly clear and transparent; "common" rosin is much darker in color, but still homogeneous, clear and transparent; black rosin is very dark, almost approaching a black, and opaque. The grades of rosin are dependent upon the quality of the original resin from which the rosin has been made, the temperature and duration of the distillation and the thoroughness of the filtration or straining of the rosin.

Rosin is slightly heavier than water, its specific gravity being 1.044 to 1.086. It is insoluble in water, but is soluble in about eleven times its weight in 95% alcohol. It is completely soluble in acetone, methyl alcohol, amyl alcohol, benzene, chloroform, carbon disulphide, ether, ethyl acetate, oil of turpentine and fixed and volatile oils.

It is partly soluble in petroleum ether (canadol). It is also soluble in boiling solutions of the alkaline carbonates or hydroxides, becoming hydrolyzed, and taking up the elements of water to form abietic acid with which the alkalies combine to form rosin size. Rosin is a mixture of two acid bodies, pinic and sylvic acids, which are isomeric and have the formula $C_{20}H_{30}O_2$. Some authorities consider that the composition of rosin is not that of a true acid, but an anhydride, abietic anhydride, which will take up water to form abietic acid. A solution in hot alcohol deposits crystals of sylvic acid on cooling. The acid content of rosin varies from 83.5% to 94.2%.

Grading of Rosin

After the turpentine has been distilled off, the rosin remains in a molten condition mixed with dirt or contamination of various kinds. It is then strained through raw cotton fibre and run into crude rough casks. The casks are, as a rule, calked with sandy earth to prevent the liquid rosin from running through the cracks. The rosin is graded almost entirely according to color, although sometimes clearness and cleanliness are taken into consideration. The grades are: B, D, E, F, G, H, I, K, M, N, W-G and W-W. B is the cheapest and darkest grade, and W-W the most costly and lightest grade. Wood rosin or Yaryan extract rosin is ruby red in color and generally is of E or F grade, uniform in character and very free from dirt.

Methods of Rosin Analysis

Determination of the Physical and Chemical Constants

A—The Physical Constants

Determination of the Moisture Content. Weigh 1½ grams of powdered rosin into a weighed platinum dish. Place in a drying oven and dry at 100 deg. C. to constant weight. Five hours drying should be sufficient. From the loss in weight thus obtained the percentage of moisture can be calculated. It is to be noted that together with moisture the volatile constituents, which were not driven off at the temperature of the oleo-resin distillation, are included.

Determination of the Specific Gravity. The specific gravity may be determined by the use of Young's Galvitometer for solids, or by any other method convenient to the analyst.

Determination of the Melting Point. Three separate determinations of the softening and melting points should be made and the results averaged. A sharp melting point will not be observed.

B—The Chemical Constants

Determination of Ash Content. Weigh 5 grams of rosin into a platinum crucible and ignite to a white

or light gray residue. Cool in a desiccator and weigh. From the weight obtained the percentage of ash can be readily calculated.

Determination of the Insoluble Constituents in Petroleum Ether. Weigh one gram of pulverized rosin into a glass stoppered Erlenmeyer flask of 300 c.c. capacity. Add 150 c.c. of cold 70 deg. Bé. petroleum ether. Stopper the flask and shake. Let this stand with frequent shaking for 48 hours. Then filter the solution through a carefully dried and weighed filter. Wash the residue with fresh petroleum ether and dry in a drying oven at 100 deg. C. to constant weight. At least six to seven hours should be necessary, for the petroleum ether is difficult to separate from the insoluble residue. From the result obtained the percentage insoluble in petroleum ether can readily be calculated. If powdered rosin is placed in the sunlight these insoluble compounds are formed very rapidly, and if rosin in solution in petroleum ether is placed in the sunlight these insoluble compounds are also formed. The chemical composition of these insoluble substances is unknown, but they are assumed to be oxyacids. It has been proved that the solubility of these compounds in petroleum ether is materially increased by the presence of abietic acid, but experimental proof is lacking as to the percentage of solubility. It is, however, evident that when the petroleum ether solution of abietic acid is saturated with these compounds the excess is precipitated from the petroleum ether solution. Precipitates have been obtained, the weight of which amounted from one-tenth of one per cent to nearly 6¾ per cent of the weight of the rosin. It can readily be seen that the percentage of abietic acid in the rosin has a direct bearing on the amount of this precipitate and that the percentages obtained are therefore only an indefinite percentage in themselves of the amount of these compounds actually present in the rosin. The theory has also been advanced that these compounds have no sizing value and that their amount should be as low as possible, but no consideration has been made for their reaction in the size-making process.

Determination of the Acid Number. The acid number is the number of milligrams of KOH required to neutralize the abietic acid $C_{20}H_{30}O_2$ in one gram of rosin.

Dissolve one gram of powdered rosin in 50 c.c. of 95 per cent alcohol which is neutral to phenolphthalein. Titrate this solution with $^N/_2$ alcoholic KOH, using phenolphthalein as the indicator.

Multiply the number of c.c. of $^N/_2$ KOH used by 28.055 and the result is the acid number.

$^N/_2$ alcoholic KOH contains 28.055 g. of KOH (purified by alcohol) to the liter, and in solution in 95 per cent pure alcohol (free from aldehyde) 1 c.c. of this solution contains .028055 grams or 28.055 milligrams. The solution should contain no precipitate of K_2CO_3, which is insoluble in alcohol.

The reaction proceeds in accordance with the following equation:

$$C_{20}H_{30}O_2 + KOH + H_2O \rightarrow KC_{20}H_{29}O_2 + 2H_2O.$$

The molecular weight of abietic acid is 302.34 and that of potassium hydrate 56.11. It is evident from the above equation that 302.34 parts of abietic acid by weight combine with 56.11 parts of potassium hydrate by weight, and that if the amount of rosin were 1,000 milligrams and pure abietic acid—that is 100 per cent of $C_{20}H_{30}O_2$ that the acid number would be 302.34) 56.11 ($.18558 \times 1{,}000 = 185.58$, which is equal to 18.55 per cent of KOH.

62 units by weight of Na_2O are equal to 112.22 units of KOH for: $2C_{20}H_{30}O_2 + Na_2O + H_2O \rightarrow 2NaC_{20}H_{29}O_2 + 2H_2O$.

For every unit of KOH we would then require 112.22) 62 (.55248 units of Na_2O.

Knowing the weight of Na_2O the weight of 48 per cent soda ash or 58 per cent soda ash necessary for neutralization of the abietic acid can easily be calculated and is shown by the following chart which is based on 100 pounds of rosin:

Acid No.	% abietic acid	lb. Na_2O	lb. 48% soda ash	lb. 58% soda ash
155	83.5%	8.55	17.82	14.75
156	84.0%	8.61	17.94	14.85
157	84.5%	8.66	18.05	14.94
158	85.1%	8.72	18.17	15.04
159	85.6%	8.77	18.28	15.13
160	86.2%	8.83	18.40	15.23
161	86.7%	8.88	18.51	15.32
162	87.2%	8.94	18.63	15.42
163	87.8%	8.99	18.74	15.51
164	88.3%	9.05	18.86	15.61
165	88.9%	9.10	18.97	15.70
166	89.4%	9.16	19.09	15.80
167	89.9%	9.21	19.20	15.89
168	90.5%	9.27	19.32	15.99
169	91.0%	9.32	19.43	16.08
170	91.5%	9.38	19.55	16.18
171	92.1%	9.43	19.66	16.27
172	92.6%	9.49	19.78	16.37
173	93.2%	9.54	18.89	16.46
174	93.7%	9.60	20.01	16.56
175	94.2%	9.66	20.12	16.66
185.58	100%	10.25	21.35	17.67
1	0.5388%	0.0552	0.1150	0.0952

As seen from the above table, the acid number of rosin varies from 155 to 175. The average is about 165. This corresponds 83.5 per cent to 94.2 per cent of abietic acid $C_{20}H_{30}O_2$.

The figures given for soda ash are for commercial soda ash and not for the pure anhydrous sodium carbonate Na_2CO_3.

Rosin is insoluble in water, but upon boiling with a solution of soda ash, sodium resinate, or sodium abietate is formed which is soluble in water, and in

this solution free rosin will remain in colloidal suspension, that is, minute particles of rosin are held in suspension in the solution, and give the solution the appearance of a milk. These particles will not separate out on standing, but will remain permanently in suspension.

By varying the amount of soda ash in the cooking of size, it is possible to obtain sizes that contain no free rosin at all and that will give a clear, transparent, amber-colored solution in water, and sizes that will contain any amount of free rosin desired, even up to 90 per cent. Sizes with very high free rosin, however, have to be cooked under pressure.

Sizes are generally cooked with an amount of water equal in weight to the total size, that is to the sodium abietate (resinate) + free rosin. This gives the resulting size a 50 per cent content of dry matter.

The reaction of rosin with soda ash in size cooking is as follows:

$$2C_{20}H_{30}O_2 + Na_2CO_3 + H_2O \rightarrow 2NaC_{20}H_{29}O_2 + H_2CO_3 + H_2O.$$

$$H_2CO_3 \rightarrow H_2O + CO_2.$$

Sodium abietate and carbonic acid are formed and the carbonic acid breaks up into water and carbon dioxide, which is given off with effervescence or foaming. This is of great benefit in cooking size as the mixture of soda ash and rosin are thereby thoroughly agitated and it does not take as long to cook as with caustic soda, which does not cause effervescence. Not only that, but when rosin has used up all of the soda ash there will be no evolution of gas and the size will be thoroughly cooked. It takes from about four to six hours to cook size. It is to be noted that if the steam is shut off at any time during the cooking, the chemical action will cease, there will be no combination of rosin and soda ash. It requires an elevated temperature to cause the chemical reaction.

If we wish to obtain a size containing a definite percentage of free rosin, the following table, which is based on 100 pounds of rosin of average acid number 165 may be used. The number of gallons of water are sufficient to make a size containing 50 per cent dry matter.

Rosin, lbs.	Na_2O, lbs.	58% soda ash, lbs.	Abietic acid, neutralized, lbs.	Free rosin, lbs., or % free rosin	Sodium abietate or sodium resinate, lbs.	Total size lbs. sodium resinate + free rosin, lbs.	Gals. of water weight equal to weight of total size
* 100	9.10	15.70	88.9	11.1	95.36	106.46	12.75
(B) 100	8.20	14.14	80.	20.	85.82	105.82	For all practical purposes 12½ gals. of water to 100 pounds of rosin
(B) 100	7.175	13.37	70.	30.	75.09	105.09	
(B) 100	6.15	10.60	60.	40.	64.36	104.36	
(B) 100	5.125	8.84	50.	50.	53.64	103.64	
(B) 100	4.61	7.95	45.	55.	48.27	103.27	12.37

* This is a neutral size, i. e., approximately all of the free abietic acid in the rosin has been neutralized. The size should be diluted with water before adding to the beaters.

(B) Formula can be used for rosin of any acid number without change. 20 per cent free rosin size—should be diluted with water before adding to the beaters. 30 per cent free rosin size—should be diluted with water before adding to the beaters for best results and to avoid trouble should be emulsified. 40 per cent free rosin size—must be "emulsified" before adding to beaters. 50 per cent free rosin size—must be "emulsified" before adding to beaters. 55 per cent free rosin size—must be "emulsified" before adding to beaters.

The emulsifier is a patented injector, which with the aid of steam pressure atomizes the free rosin in the thick size into water so that a milk is formed, i.e., a colloidal suspension of the free rosin in an aqueous solution of sodium resinate.

Determination of the Saponification Number—The saponification number is the number of milligrams of KOH required to hydrolize one gram of rosin in boiling solution. It is the sum of the acid and ester numbers.

Weigh one gram of powdered rosin into an Erlenmeyer flask of 300 c.c. capacity fitted with a reflux condenser. Add 70 c.c. 95 per cent alcohol. After the rosin is dissolved add 25 c.c. of $^N/_2$ alcoholic KOH and boil for two hours under a reflux condenser. The flask should then be cooled and the condenser washed down with a little distilled water. The excess of KOH is then titrated with $^N/_2$ H_2SO_4 using Phenolphthalein for the indicator. Substract the number of c.c. of $^N/_2$ H_2SO_4 used from the number of c.c. $^N/_2$ KOH used and the result is the number of c.c. $^N/_2$ KOH used for complete saponification. Multiply the number of c.c. $^N/_2$ KOH used by 28.055 and the result is the saponification number.

Alcoholic caustic potash solutions do not keep well owing to a tendency to resinify, carbon dioxide is absorbed from the air, and a certain amount of silicate is dissolved from the glass of the flask. In order to eliminate these a blank experiment is carried out and the figure obtained taken as the strength of the alkali. This blank experiment must be carried out under exactly the same conditions as that of the hydrolysis itself but, of course, omitting the rosin. The determination must be carried out in a flask of the same size and same make as that used for the hydrolysis and the boiling must be carried on for the same time. The amount of water used to wash down the condensers should be the same in both cases and it is best that the two flasks be heated on the same water bath.

It is assumed that the remaining rosin over and above free abietic acid is combined with alcohols, that is composed of esters which are compounds of alcohols and abietic acid or abietates (resinates) of the alcohols and that these abietates are broken up by boiling with KOH into potassium abietate (resinate) and free alcohol; in other words, they are hydrolized. It is also assumed that with the complete hydrolysis of the rosin that both the free abietic acid and the abietic acid esters or abietates (resinates) are all converted into potassium abietate (resinate)

and were the hydrolytic agent soda ash they would all be converted into sodium abietate (resinate). It must be understood that esters react slowly to hydrolysis with alkalies and at an elevated temperature.

In size making, if the amount of soda ash is sufficient to react with only the abietic acid in the rosin, we obtain a neutral size (or an approximate neutral size) for some of the esters may be broken up in the cooking leaving a small amount of free abietic acid. This is explained for the reason that in the size making process the rosin is neutralized in the presence of water which it is insoluble in, and that not being thoroughly mixed with the neutralizing agent, soda ash, that the soda ash attacks and hydrolizes some of the abietic acid esters, leaving some of the originally free abietic acid still free in the size.

A free rosin size is an easy size to make and requires no previous analysis of the rosin. On the other hand, a neutral size is a difficult size to make, for we have the esters to contend with as explained above.

The old-fashioned, completely neutralized and hydrolized size is still more difficult for it is necessary to cook the size until it will give a clear amber solution with water with no milky turbidity due to colloidally suspended free rosin. Twenty, thirty and sometimes forty pounds of soda ash were used to cook this size and the excess soda ash salted out and thrown away. In all probability twenty pounds would have cooked any rosin that a mill had the misfortune to get—a saponification number of about 220.

There is no satisfactory explanation for a saponification number of over 182.3 unless that in the formation of esters the abietic acid itself is broken down into acids of low molecular weights and the esters of these acids when hydrolized by KOH form salts with potassium other than abietates, but as yet they have not been isolated.

Determination of the Ester Number—The ester number is the difference between the acid number and the saponification number and is equal to the number of milligrams of KOH used (presumably to hydrolize the esters in 1 gram of rosin). It is to be noted that if the substance had been pure abietic acid instead of rosin the acid number and the saponification number would have been equal and there would have been no ester number.

Results of the determination of physical and chemical constants of a sample of F grade rosin:

Moisture (including volatile constituents)	.031%
Specific gravity	1.08
Softening point	70°C
Melting point	83°C
Ash content	.069%
Acid number	173.9
Abietic acid	93.7 %
Saponification number	182.3
Ester number	8.4

Rosin is an unstable compound, and the results obtained from determinations on samples of a grade of rosin, cannot be compared with samples of another grade, or samples of that particular grade with any degree of relative, acid or ester content, even the physical constants vary with samples of the same grade. The rosin used in the sizing of paper is of the darkest grade that can be used without influencing the color of the paper. The darker the rosin the harder the rosin and therefore the more sizing value. The lighter rosins are inclined to contain pitch on account of the low temperature of distillation.

For these reasons F rosin is generally used, although if color is not a factor E and D rosin may be used. G rosin is also used by those who consider that even F is too dark.

Size should be furnished to beaters diluted to at least 3 per cent of dry matter. The amount of water necessary to dilute a 50 per cent size, that is a size containing 50 per cent dry matter to a size containing 3 per cent dry matter is figured as follows. Two hundred pounds of 50 per cent size is equal to 100 pounds of dry size which is equal to 3 per cent. A 3 per cent solution is therefore $100 \div 3 = 33.33 \times 100 = 3{,}333$ pounds. 3,333 pounds of size and water —100 pounds of dry size and 100 pounds of water = 3,133 pounds of water to be added. If one pound is equal to .1198 gallons of water, 3,133 pounds would be equal to $3{,}133 \times .1198 = 375.33$. 375 gallons of water would be necessary to dilute the 200 pounds 50 per cent size to the 3 per cent size. The dilution of a size containing any percentage of dry matter to any percentage dilution can be figured in like manner.

Silencing Noises

SILENCERS are coming into use in industrial and power plants. For example, a silencer was applied recently to a reducing valve which made considerable noise because of the high velocity of the steam through the valve. The noise was conducted through the piping all over the plant. A suitable silencer or muffler eliminated the noise.

There are doubtless places in and about every paper mill where unnecessary noises are permitted. Not long ago I wrote a letter to a contractor who was running a steam shovel close to a group of office buildings and not far from my own office. The safety valve was continually blowing off and making so much noise that it was impossible to talk over the telephone, or carry on a conversation in the office without shouting into each others' ears. I explained to the contractor that it is possible to muffle safety valve noises so well that they cannot be heard at all. In a polite reply the contractor agreed with me but he didn't muffle the noise. He said, "We are nearly through with this job."

My own personal opinion is that when noises are muffled or eliminated, work is performed better and more efficiently. This applies everywhere—in factories, out-of-doors and in offices.—Schaphorst.

Cost and Factory Accounting—Part XIII

By H. M. GRASSELT
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ALTHOUGH part of the finishing room equipment, platers are considered collectively a producing unit. The general theory underlying the assemblage of plating costs is, that direct-labor hours and costs, cost of supplies and overhead expenses must be calculated separately instead of being combined into a straight departmental rate. Experience and thorough studies of plater room cost problems have shown conclusively that direct and separate application of these three cost components is the only methods best suited to the existing conditions.

Figure 21 represents a summary for plating cost details. It is used for the daily entry of data reported in Figure 20, the Daily Plater Report (June, 1925, issue). The form shows, as will be noticed, columns for the entry of the Production Order number and Finishing Order number respectively. The Production Order number is used whenever the entire run made on that number is to be delivered to the plater room; the Finishing order number is entered if only part of the run or paper from stock has been forwarded to the platers. If the entire production made on a specific Production Order number is to be plated, the total net weight of rough paper is to be transcribed from Figure 6d, the Rough Production Order (Dec., 1924) into the column "Rough Paper." It is not necessary to also enter the cost of the rough paper, since after the completion of plating operations the total cost of plating is to be carried over into the Summary of Cost of Finished Paper for that particular Production Order number.

However, if the rough paper has been taken from stock, the value of the delivery must be entered so that the grand total constitutes the complete cost of the plated lot and not only the cost of plating. For that purpose, as well as for refinishing of paper, a special summary, which will be discussed briefly in a following chapter, may be used to advantage.

The next column "Direct Labor" has been provided for the daily entry of the number of reams plated, their nominal weight and the earnings of the operators (plater man and girls). The calculation of the consumption of plater supplies (linen, zinc, board, etc.) is an intricate problem. Since it is obviously impossible to charge the actual cost of plater supplies to a certain quantity of plater surfaced paper, special rates must be established for the unit of one hundred pounds of plated paper. These rates will, of course, vary according to the kind of surfacing and the materials used in the process. In order to arrive at a reasonably accurate rate, the manufacturer should compute his expenses for plater supplies over a definite normal operating period and use the comparative ratio of the various finishes and the respective quantities plated in the very same period for the determination of the standard supply rates. For instance, it will be found, that single sheet linen finish or fancy sur-

Production Order No. ..... Style of Finish .....
Finishing Order No. ..... Quantity Ordered ..... Promised For .....
Grade ..... Size and Weight ..... Color ..... W/M .....

Rough Paper Received	Date	Direct Labor			Cost of Supplies	Overhead Expenses								Total
						.....Tables		.....Tables		.....Tables		.....Tables		
		Cost	Rms.	Nominal Weight		Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	
	Totals													

.....lbs. finished Finished Cost per 100 lbs. $.....

.....lbs. Broke

Figure 21

facing require the highest rates, perhaps 80 cents per hundred pounds of surfaced stock, while sectional linen finished paper will be adequately covered by a rate of 30 cents a hundred pounds. The consumption of supplies for board and zinc finishes is so slight, that a rate of 5 cents for a centweight of finished paper very amply covers their cost.

The issuance of supply rates is very much facilitated in mills that keep a Book Record.* Its data furnish a sound basis for the determination of reasonably accurate supply rates. If properly kept—and it requires very little work to do that—these records exhibit in a concise form all details necessary for the computation of standard rates for the various kinds of surfacing supplies.

The summary contains, further, several columns for overhead expense charges. Plater room overhead expenses are distributed over the number of platers that go and make up the productive department and calculated per plater and table hour. For instance, if the overhead allocated to a plater with normally five tables, is fixed at $1.50 per machine hour, the overhead rate will be 30 cents per table and per hour. Consequently, if one or more tables are inoperative, the overhead rates for the active tables will increase proportionally in order to cover the predetermined standard plater overhead rate of $1.50 per machine hour.

The last column in Figure 21 serves for the compilation of the total plater charges.

General Finishing

Counting, jogging, sealing, etc., are classified as general finishing operations and as such not covered by a special departmental rate; the cost of these operations have been included in the finishing room rates, to be sure, for Finishing Operations Proper.

A few forms may be used in connection with general finishing work for the purpose of obtaining a better control over and check of these activities. To begin with, there is the Counter's Daily Report, to record the counter's daily output. Its figures enable a check on the sorters' work. Another report is used for reporting to the cost department paper that has been put into stock untrimmed, either counted or in bulk.

There are also Reports of Paper Shipped in Rolls, Sealer's Daily Report and a Daily Report of finished Paper used to advantage in controlling activities and production. All these records are forms similar to those illustrated and explained in preceding chapters.

This concludes the description and explanation of records and forms used for collecting of cost and production data that the man in the mill has to furnish. Figure 21, the Summary of Plating Costs, is, of course, used in the cost department only. There still are, indeed, a few reports necessary for the auxiliary departments, such as shipping, repair shop, timekeeping and payroll, etc., which have an important, although indirect bearing on factory costs and production control. A brief description of their purpose and use will follow in a future chapter.

It should be borne in mind that an excessive number of forms and reports easily develops into red tape and is by no means conducive to plant efficiency and accurate costs. It is absolutely necessary, however, that every phase of the manufacture be covered adequately by a plain and comprehensive record. Consumption of materials, operative and inoperative

*See "Plater Room Management," THE PAPER INDUSTRY, January, 1924.

SUMMARY
Cost of Finished Paper
Production Order No.....

Date	Rough Paper		Calenders		Cutters		Sorting		Trimming		Paper Finished	Recapitulation Total Cost	
	Pounds	Cost	Hrs.	Cost	Hrs.	Cost	Rms. or Hrs.	Cost	Hrs.	Cost	Actual Weight		
												Cost of Rough Paper	$.....
												Calenders	.....
												Cutters	.....
												Sorting	.....
												Platers	.....
												Trimming	.....
												Sub-Total	$.....
												Credit: Fin. Broke.....lbs. @	.....
												Sub-Total	$.....
												Value of Sal. Br.	.....
												Net Cost of "P" & "M"	$.....
												Cost of "P"	.....
												Cost of "M"	.....
												Total "P" & "M"	.....
												Total "P", "M" & "B"	.....

Figure 6 e

time, and all other cost details must be reported accurately together with the results obtained.

The man in the mill, who is delegated to fill out one or the other of those records must realize the vital importance of that part of his duty. The manufacturer MUST have correct cost figures in order to successfully carry on his business. A factory without a cost system is like a ship without a compass to guide its course—it may at any moment "land on the rocks."

The series on the practical part of collecting initial cost data are herewith concluded. They were written primarily for the practical man in the mill, who is required to gather the various details to acquaint him with the principles and purpose of cost work, and to point out that his sincere co-operation is necessary for the attainment of results.

Summaries

To be of real value to the manufacturer, details of costs and factory activities must be compiled into concise statements and summaries. For that purpose, the cost department must use a few forms which exhibit the collected data and incurred expenses in their entirety, i.e., the complete cost of the product and totals for the controlling accounts and rigid production control.

Several of those summaries have been already discussed in connection with their respective departments. The next summary to be considered is the Summary of Cost of Finished Paper, Figure 6e, which may be very conveniently the reverse side of Figure 6d (Dec., 1924) the Rough Production Summary—the lower part of copy four of the Production Order, Figure 6a (Sept., 1924).

In its first column, the net weight and cost of the rough paper is transcribed from the first side, Figure 6d. The following columns are used for the daily entry of finishing room cost details, as submitted to the cost department every morning through the various reports. After all paper made on that specific production order has been finished and reported, the cost of the diverse finishing operations is added up and the sub-totals transcribed into the respective columns under the caption, "Recapitulation—Total Cost."

Finishing broke has to be properly credited to the production order at a definite value. It is customary to use the average market price of the grade of paper raw stock the mill ordinarily would pay to purveyors. In mills where the broke from the various operations is not weighed separately or collectively, the difference between the "net rough paper" and the actual weight of the finished paper is considered the "finishing broke."

Fine mills sort their papers, in most cases, into three classes namely, "Perfect," "M's" and "Broke" (salable broke). Logically, a pound of M's or Broke costs to manufacture just as much as a pound of Perfect, although their sales prices differ widely. The manufacturer cannot expect to realize a profit on his salable broke, nor can he add the differential to the cost of the Perfect paper, which follows, that M's and broke must be kept at a minimum.

Corrosion, Inc.—A Billion Dollar Concern

NINE HUNDRED MILLION DOLLARS is the estimated annual toll exacted on America by corrosion. This figure was reached by translating Sir Robert A. Hadfield's calculations into terms of dollars and cents.

Eighty-five per cent of this enormous loss by decay is needless and entirely unnecessary, according to many of America's most capable engineers and metallurgists.

Small wonder there is a growing interest in the subject of corrosion and a noticeable increase in discussion of ways and means to overcome that waste. In technical circles, the subject of corrosion and its prevention is just now vieing with the cross-word puzzle in popularity, and this nation-wide discussion is giving rise to a great many articles and editorials on the subject.

There are a number of good reasons for the growing interest in the problems of corrosion, chief among which are the two set forth in the opening paragraphs. Another reason, however, lies in the fact that with our present rate of production of ingot iron, which is now in excess of forty millions tons a year, unless some protective measures are adopted, the annual destruction of metallic properties by rust will attain totals staggering to the imagination. As Evans ably pointed out in his recent work, "Corrosion of Metals," while "the study of metallurgy—the making of metals—appeals directly to a limited number of persons, the study of corrosion—the unmaking of metals—has an interest for all who use metallic materials." This natural interest has been augmented of late by the activities of the National Research Council which, through the establishment of a Committee on Corrosion, has stimulated research on the subject and encouraged the study of preventative measures. Secretary Hoover has been active in calling our attention to wastes of natural resources, which direction of attention has reminded us again of the almost incalculable wastes enduring because of the destructive rust agencies, though our recognition of this loss in itself is hundreds of years old.

Much of value has already come from the increased public and engineering interest and discussion. Theoretical points formerly disputed and practical issues that heretofore only formed the ground work for

disagreement have, through sane presentation, been clarified to a degree where theory and practice now work hand in hand, and a great deal of splendid work has been done by such men as McKay, Evans, Aston and Speller. Indeed, through the efforts of these men, and others, partial solutions to the corrosion problem have already been discovered, and it is now merely a question of cheapening the processes, and the adoption of the principles involved by metal producers, before it will no longer be necessary to galvanize wire, to coat sheet steel with zinc or tin, or to apply paint to steel structures that the basis metals may be preserved from destructive corroding elements.

Research of Value to Pulp Industry

Much of the research in the direction of rust prevention has proven of direct benefit to the technologists of the pulp industry. Discussion of pulp plant corrosion problems has brought to light experiences which should be profitable to the entire industry and has illustrated the need for the substitution and application of special construction materials.

In the piping or pumping of the acid liquor, for instance, there is a demand for a material that can successfully withstand the action of sulphurous acid that very often contains a small element of free SO_2. In this part of the pulping processes, hard lead is being used successfully for low pressure pumps and lines. Fibre piping that has first been saturated with sulphite waste liquor or asphalt has been employed with eminent success by several of the larger plants. For high pressure, lead-lined cast iron, and occasionally bronze, has been found capable of resisting corrosion successfully. Bronze is more successful than the former, however, as with lead-lined cast iron the joints have found to corrode readily. Rather than drawn aluminum or lead lines, a monel metal lining for pipe has been found to afford a higher degree of successful operation. While the excessive first cost prohibits the use of bronze for piping, that metal can, and is being, used successfully for fittings such as valves, etc. Bronze has been proven superior to all other metals in the resistance of corrosion, but in the selection of the fittings careful watch should be kept to guard against slag spots, segregations, etc. To lower the porosity of bronze, the metal is sometimes coated with asphalt.

In the digester proper, possible corrosion to the riveted boiler plate is overcome by protecting the plate with a lining of acid-resisting brick. Owing to the scouring action of the chips and the spalling of the bricks by reason of the wide temperature range, there is great necessity for keeping the joints well pointed. This can be done satisfactorily by pointing with a cement of litharge, and a properly constructed brick lining should have a life upwards of ten years.

Hard lead tubes submerged in water are often employed to cool the hot acid gases from the digester. These tubes, owing to the heat and pressure of the gases (upward to 40 lbs. per square inch and 150 degrees C.) must be of strong, rugged construction. It is being found by some pulp plants that due to the destruction of corrosion on these tubes, it is economical to employ bronze or copper. These metals are far more acid resistant than lead.

When the gases pass from these coolers to the acid storage and recovery system, the older plants employ wooden tanks as receivers, the tanks being constructed usually of yellow pine. As the corrosion of hot acid gases is very serious in most plants, several of the modern mills are employing digester brick-lined concrete tanks. In spite of the extra first cost, the concrete tanks, so lined, have been found to be most economical over a period of years.

Regardless of the type of acid tower employed, to line the concrete with a dense vitrified acid-proof brick is quite imperative to long and efficient tower life. In addition, the joints of the brick lining should be repointed with a glycerine-litharge cement every 18 months or two years. Only in this way can the destructive tendencies of corrosion be successfully combated.

Future Developments to Prove Victorious Over Rust

While the pulp producing industry is not so beset with the problems of corrosion as some other branches of commerce, it is evident that many difficulties do exist. We have not attempted to enter upon a comprehensive discussion of the problems and their relation to our industry. We have merely pointed out a very few ways in which some of the leaders are overcoming the tendencies of metallic decay. Rather, we would leave the discussion to more capable hands, and if what we have said in the above paragraphs reminds any of our readers of other ways in which they have overcome the waste of corrosion, we would be indebted, as would the industry, to have such readers write us fully of their experiences, setting forth, in detail, their conclusions or findings.

The problem of corrosion is one of very noteworthy economic importance. Particularly so when one considers the advances we have made since the days when rapid deterioration of metallic materials was of little consequence, and when we consider the still further advance in the application of metals that will be made as ensuing years fold away. In the past, solutions to important problems have always been found, and we have every faith that a solution for wasteful and costly rust will be discovered, now that the problem is being attacked vigorously and from many angles.

It may even now be said that metallurgists are learning to incorporate into iron the content of chromium. When this content is incorporated to the extent of 12 to 18 per cent, the result is a rustless iron capable of taking a high polish and absolutely impregnable to rust or tarnish, not only to ordinary atmospheric conditions and influences but even to

such powerful corrosive elements as boiling sulphuric acids. Had we access to chromium in such quantities as sand, we would have no problem of rust today. While chromium is not a rare element, it is, however, sufficiently uncommon to make the most of high-chromium steel prohibitive for ordinary usage.

It has been found also that the incorporation of 0.5 per cent of copper into iron will materially increase the resistance of the resultant metal to corrosive agencies. Investigators are collecting more and more information on the causes of corrosion, and more and more material for the development of protective coatings or paints. One railroad, as an instance, has recently found that by applying, cheaply, a protective coating developed in an eastern laboratory, a marked decrease in corrosive tendency on rails results. Professor Baker of the University of Michigan has discovered a method whereby steel can be electroplated to a thickness of .001 in. instead of the usual .0001 in., at very little additional expense. This additional thickness in the nickel plating affords a protective coating to the basic metal that capably resists the salt-spray test of the United States Bureau of Standards.

Hence we express the belief that the presence and activity of rust is nearing an end. The solution to costly corrosion will become an actuality in the next few years. Let us add that any reader of THE PAPER INDUSTRY having experiences in the prevention of rust that would be of benefit to other plant operators, we will be glad to publicly acknowledge the industry's appreciation for their submission and publication.

Standardizing Power Production in the Paper Mill

By LYNN L. ARMANTROUT

The table shown in this article is an example of a comprehensive report pertaining to the manufacture of paper board. It was used successfully by one company as a quick indicator of daily production power costs. The idea can be applied to the manufacture of any kind of paper by changing the terms to suit the product and is exhibited and described herewith for that purpose.

The elements which contribute to the summaries shown in this power production table are Power Distribution and Efficiency, Power Production Efficiency and Power Cost. Each of these three subjects and how they affect the table shown in this article will be treated in succeeding chapters.

RECENT years have seen great strides forward in economical power generation and the application of same in paper mills throughout the country. It is daily becoming a rarer sight to see a paper mill of any size struggling along with a poorly operated and dilapidated power plant. The awakening of paper mill executives to the importance and possibilities of power plant efficiency is certainly gratifying to the consulting and operating paper mill engineer, and let it be said that engineers in paper mills everywhere are intensely interested in the best methods of getting more pounds of paper per pound of coal and are proving such interest by some remarkable records, in plants where they have been given the proper equipment.

Paper mills generally have a chief engineer, whose duty it is to deliver power to the line shaft; there his responsibility ends and the millwright or master mechanic has the job of maintaining delivery of power. Some places have a master mechanic over the entire mechanical equipment. In the matter of keeping power plant and power production records this latter arrangement works out easily, as it eliminates encroachment of authority in obtaining record data which sometimes works adversely in the former plants.

Paper mill power costs represent from one-third to one-half the conversion charges in the average mill. The generation of motive power represents a very small part of the coal consumption in plants using exhaust steam for process work. Most of the cost is properly chargeable to drying, boiling, heating of water, etc., so that the paper mill power cost system that stops at the generation of steam without taking account of process work tells the man who is responsible for the coal consumption per pound of paper very little of value in finding the cause and remedy for excessive coal consumption. The paper mill power record system must be followed from the coal pile to calender stacks to get results.

The writer devised the cost and efficiency report shown below and put it in operation for one of the largest paper mills in this country where it proved of remarkable value in giving information in sufficient detail, without prohibitive detail work, so that the chief engineer and superintendent knew daily the efficiency of both the power plant and production from a power standpoint.

You will note that the power is checked in connection with the kind of paper made. Thus the report eliminates the alibi of the production man who in-

variably discounts any inference from the engineer that the high coal consumption of a given date was due to unnecessary use of steam in process work, by saying that the steam used was necessary due to the grade of paper they were making. As the engineer seldom has any information or records for comparison of power consumed by the different grades of paper made, he is unable to carry his end of the subject further. Power requirements do vary with the kind of paper made and for that reason the power report should show the paper being made at the time corresponding with the report.

POWER PRODUCTION REPORT

(Figures Shown Not Actual Records)

Date	Kind of Paper Made—	Caliper	Mach. Ft. Per Min.	Back Pressure	Tons Paper Made	Boiler H. P. Used	B. H. P. Per Ton Paper	Ton Coal Used	Lbs. Coal Per Ton Paper
2-17	Plain chip	20	130	5 lb.	130	81,746	624	170	2,616
5-2	Wood pulp lined yellow tint wall board	40	108	8 lb.	92	45.546	480	88	1,913
5-27	Lavender tint wall board	40	115	6 lb.	110	40.973	360	81	1,472
6-7	Jute outer liner	18	130	5 lb.	70.4	49,333	696	90	2,557
7-10	Mill wrappers, No. 1 finish	22	200	8 lb.	40.7	17,884	352	36	1,769

The caliper, speed of machine and back pressure in dryers are also points that vary with the kind of paper. The total production is, of course, the vital determining factor in the final power production efficiency. The engineer should know this daily to check with coal consumed.

The boiler horsepower per ton of paper is a very good point to know. It is here shown as the true boiler horsepower. If divided by 24 hours to bring the figure down to a small one, it is easier to tell its relative value at a glance.

The total B.H.P. used, and tons of coal used, are figures which determine the value of the production efficiency. The pounds of coal used per ton of paper is the figure we are most interested in, and which requires no explanation to paper mill men.

The cost of paper per ton for power is a subject in itself and not concerned with this article.

The true value of the power production report, as shown, lies in its usefulness to the operating engineer and production superintendent; as the record of the best run made on a given grade of paper in the mill, soon becomes a standard of power to be closely followed whenever making that grade of paper.

Similar runs soon repeat themselves, and by watching the record of the previous run and checking the total load of that time with the present one, it is a simple matter to locate the trouble if the load in the present run greatly exceeds the previous one. Reference to hourly ammeter reading of previous date will indicate the individual Jordan, beater, or other unit which is pulling too heavy. The average hourly indicated kilowatt meter reading may also be shown to advantage on this record.

It is surprising to find how the load will vary at times when the same paper is made at the same speed of paper machine and output in tonnage. It must not be assumed that small variations are not normal but rather that large variations, due to negligence along the line somewhere, are quite common and work to the disadvantage of the power plant.

Unnecessary back pressure in the dryers is a common case, for example, and every pound increase in back pressure of the engine or turbine may mean an enormous increase in coal consumed.

It will be found that if the interest of the operating engineer is aroused to the possibilities of getting more uniform runs from the production department, he will soon realize that the steadier and lighter his power load is, the easier his job will be and the chief engineer will see a decided improvement in his average for coal consumed per ton of paper.

It might be well to add that the above system was devised and put in operation for one shift by the writer when he was an operating engineer, and proved of such value that it was adopted for the three large mills of that company.

Frothing and Pin Holes in Coated Papers

A Discussion

This subject was treated in an article by A. Verrill and E. Sutermeister, in the June, 1925, issue of this magazine, and discussion invited. Dr. Th. Bentzen, chief chemist of the Whiting-Plover Paper Company, Stevens Point, Wisconsin, has given the following information on the subject which we hope will encourage the discussion to be carried further.

LONG before I was employed in his mill, I learned from Mr. George A. Whiting that "The question is not what you put in but how you put it in." This word holds good of the frothing and pin hole trouble, too, as the following proof from experience will show:

It was during the war time that a baryta plant over in the old country suddenly was deprived of its foam reducer, the milk. The war time kept the chemists busy, not only as poison gas producers, but also in honest work. It forced them to develop the century of substitutes. Sawdust as a substitute for grain, and clay as a substitute for soap, why not castor oil

as a substitute for milk, at least as long as the supply would last?

But to cut the matter short, castor oil was all right as soon as I found out that it had to be brought into the baryta mixture with help of ether. The oil (any oil) is completely mixed with ether at any proportion, and thereby dispersed to an utmost fine distribution, which will secure the biggest possibility to come into contact with the small air bubbles through the whole mixture and destroy them. The foam will easily and completely disappear, and no foam, no pin holes.

When using milk, 300 cc were used for 20 kilos of coating mixture. As milk contains about 3 per cent of fat, the 300 cc would be equivalent to about 9 cc of castor oil. In preparing the oil for use, 50 cc were dissolved in 1,000 cc of ether and 180 cc of the mixture, equivalent to 9 cc of oil, used for each 20 kilos of coating mixture. I believe that 1 cc of oil in 10 ether would be a satisfactory proportion.

It sometimes happened that the first coating showed a few matt spots, but they disappeared at the second coating or if the machine was run a little slower, allowing a more intense brushing.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Painting "Inaccessible" Places

I SAW an engineer not long ago painting portions of pipes and beams on the ceiling of his plant that one would ordinarily consider un-get-at-able without first building scaffolding. He did the job very easily and well by simply wiring a paint brush onto the end

of a pole and wielding the brush from the pole's end, as shown in the accompanying sketch. That is an excellent kink, in my mind, because I recall distinctly that many times I risked my neck standing on the tip of a ladder and reaching out into very dangerous positions to dab some paint here and there. Many accidents have occurred because of this sort of practice. It never occurred to me to put the brush on the end of a long stick and do such work more comfortably and safely, and for that reason I am passing this valuable and simple kink along.

Belting a Vertical Shaft

TO CONNECT a vertical shaft with one that is horizontal by means of a belt necessitates a so-called "quarter turn drive." Because of the 90-degree turn, it is advisable to allow ample space between the pulleys. One well known rule is: "Make the distance between shaft centres at least twice the diameter of the larger pulley." Another rule given by Cromwell, is: "Multiply the width of the belt in inches by the diameter of the driving pulley in inches; and extract the square root; then multiply by 10." The result, I presume, is the distance between pulley rims in inches. The author does not state. Anyway, my advice is: Of the two above rules, use the one that gives the LARGEST result.

The weight of the belt itself is usually a hindrance to a good and "easy" distance between shaft centres because of the tendency of the belt to drop down away from the pulley on the vertical shaft. For that reason a light belt is advantageous. The lighter the better. Also, a pulley on the vertical shaft having considerable crown is more liable to hold the belt up in position than is a pulley with small crown.

Before resorting to the use of idler pulleys to hold the belt in position on the vertical shaft pulley it is well to do some experimenting by shifting the pulley on the vertical shaft up and down and "trying" various positions. Avoid the idler if possible.

Simple Rules for Boiler Efficiency

HERE is a handy rule, of interest to paper mill engineers in charge of boilers, for roughly determining boiler efficiency when the chimney gas temperature and the heat value of the fuel are both known:

"Multiply the temperature of the exit gases in degrees Fahr. by 625 and divide by the heat value in B. T. U. per lb. Then subtract from 100. The result is the approximate boiler efficiency in per cent."

The writer developed this rule in 1918 and has applied it ever since to boilers that have been tested and he finds that it is generally satisfactorily close.

For example, it can be applied with surprising accuracy even to the recent very high efficiency obtained in a New York City power plant, namely, 92.7 per cent. In that case, the chimney gas temperature was reduced to as low as 193 degrees Fahr. The heat value of the fuel was about 14,500 B. T. U. per lb. Applying the rule: multiplying 193 by 625 and then dividing by 14,500 we get 8.3. Subtracting 8.3 from 100 we get 91.7 per cent. The actual overall efficiency as computed by the engineers in charge was 92.7 per cent. In other words, this rule is only one per cent off even when applied to this unusual example.

The writer has received requests to convert this

rule over so that it can be applied to oil burning as easily as to coal. For oil burning the rule becomes:

"Multiply the temperature of the exit gases in degrees Fahr. by 5,000 and divide by the heat value of the oil in B. T. U. per gallon. Then subtract from 100. The result is the approximate boiler efficiency in per cent."

It must be understood of course that in applying this rule the fireman is doing his level best to effect complete combustion. If the fire is so poor that the gases contain a large percent of CO; the rule naturally will not hold. Nor will it hold if the exit gases contain too much air.

The usual but much more complex procedure in determining boiler efficiency is to find the heat in the steam evaporated by the boiler and divide it by the heat given off by the fuel. In other words boiler efficiency, like all other efficiencies, is equal to output divided by input. This, however, simplifies the whole affair. It is based on the logic that if you deduct the heat passing out of the chimney from the original heat contained in the fuel, you have the approximate amount of heat absorbed by the boiler. Then by dividing that amount by the original heat contained in the fuel we have the approximate boiler efficiency.

The Cost of Smoke

ACCORDING to figures accredited to the Bureau of Mines, the annual loss due to smoke in the average industrial city in the United States is a serious matter. It amounts to $7.66 per capita. Thus for a city of 100,000 population the loss suffered from smoke may be estimated at $766,000.

This may not be of much significance to the paper mill from the standpoint of community loss because paper mills are usually located in the more sparsely settled sections of the country. However, smoke generally means that combustion is incomplete. From that standpoint the paper mill owner and engineer SHOULD be interested.

Belt Transmission Formula

THE formula that is used probably more than any other in the transmission of power through belts is this one:

$$\text{H. P.} = \frac{(T - t)s}{33{,}000}$$

Where T = Tension in lbs. on the tight side;
t = tension on the slack side, pounds;
s = speed in feet per minute.

The writer has often wondered why it is that engineers who develop formulas persist in leaving a number in the denominator when it can as easily be placed in the numerator. It is much easier for most of us to multiply than to divide. The process of dividing is generally slower and more vexing. Thus, the above formula may be written in the following form and still be almost as accurate as in the original:

$$\text{H. P.} = .0000303\ (T - t)s$$

Air Required for Combustion

TO FIND the approximate theoretical amount of air required to burn one pound of coal, multiply the heat value per pound by .00077. If the carbon content in the coal is known, as well as the percentage of CO_2 and CO in the flue gas, this rule is a good one: "Multiply the weight of carbon in each pound of coal by 240 and divide by the sum of the percentage of CO_2 and CO in the chimney gas." By applying these two rules and subtracting the theoretical from the actual and dividing the difference by the theoretical number of pounds of air, the percentage of excess air is determined. Thus, for example, if the heat value of the coal is 13,000 B.T.U. per pound, if each pound of coal contains 0.78 pound of carbon, and if the chimney gas contains 13 per cent CO_2 and one per cent CO it will be found that the excess air amounts to approximately 33 per cent.

Well, 12 Miles Deep, Impractical

WOULD paper mills profit from the sinking of a shaft 12 miles deep as proposed by Sir Charles Parsons?

My opinion is "No," for the following reasons:

1—We are already acquainted with the interior of the earth to depths of 18 to 20 miles due to upturned and exposed strata in mountains and canyons.

2—Sinking a 12-mile shaft would be extremely hazardous. Present methods would be inadequate, hence it would be necessary to develop new ones.

3—After reaching the 12-mile depth, nothing new would be learned aside from the developed processes of deep well digging. The well would not "pay" as a steam generator. If there were no coal, oil, or wood on this earth, it would be cheaper to harness the tides, the wind, or the sun.

Are Oil Fires Banked?

THE cost of banked fires, where coal is used for fuel, varies in every plant. As a rule, the greater the number of boilers the greater the cost of banking. Where oil is used for fuel, the banking cost is practically nothing because on shutting down for the night, the fires are simply turned off. However, some engineers assert that the cost of fuel oil required to get the boiler started the next morning is properly chargeable to banking, and maybe it is. I am inclined to agree with them. It takes only about 15 minutes to make the average oil fired boiler ready to pick up its load. So the cost of "oil banking" is seldom serious.

Foreman Training in the Paper Industry

Part III—Division Material for Foremen's Conferences

By J. K. NOVINS

Author of "A Training Program for the Factory Foreman," "Foreman Training in Practice," "Manual of Practical Training for the Railroad Foreman," etc.

Making the Job Analysis

AT THE conference of the foremen from the Bemis Bros. Bag Company plant, typical job analyses of jobs in the printing, mechanical, manufacturing, cutting and mechanical departments were made by the men. In each department the foremen analyzed the pay-roll into work jobs, and these in turn were subdivided into operations and operating points, as was explained in the previous article.

For the information of readers of THE PAPER INDUSTRY, the writer will reproduce the analyses, exactly as they were made at the conference. The first dealt with the pay-roll jobs in the printing department.

Printing Department

The pay-roll jobs in the printing department were listed as follows: 1. Pressman; 2. Feeder; 3. Machinist; 4. Stereotyper; 5. Engraver; 6. Artist; 7. Router; 8. Compositor; 9. Porter; 10. Type cleaner; 11. File clerk; 12. Stereotyper helper.

Now, all of these twelve pay-roll jobs could in turn be sub-classified into work-jobs, but this would take too much time and would be unnecessary for a conference of comparatively short duration. Therefore, the leader of the conference chose but one of the pay-roll jobs listed and had the foreman sub-classify that in its component work jobs. The pay-roll job chosen for the sub-classification was that of pressman. The same principle was followed throughout in making the analyses, and will be adhered in reproducing the analyses in this article.

The pay-roll job of "pressman" was classified into the following work jobs: 1. "Gets his job"; 2. Sets up press job; 3. Runs job; 4. Minor adjustments and care of machine; 5. Removes job from press.

The foreman who made the analysis then chose one of the work jobs—"setting up job," and reduced it into the following operations: 1. Clamps plates on cylinder, one at a time; 2. Washes up rollers; 3. Changes ink; 4. "Makes ready"; 5. Gets job o. k'd.

In turn, the operation "makes ready," was resolved into the following operating points: 1. Takes impression; 2. Replace packing; 3. Makes adjustments if necessary; 4. Sets ink; 5. Registers colors; 6. Pulls proof.

Mechanical Department

Now let us illustrate with a similar job analysis made by a foreman in the mechanical department. This foreman listed the following pay-roll jobs in his department: 1. Machinist; 2. Electrician; 3. Fireman; 4. Carpenter; 5. Plumber.

Payroll-job "Machinist" was classified into the following work jobs: 1. Lathe; 2. Milling machine; 3. Shaper; 4. Drill press; 5. Bench; 6. Floor; 7. Repair; 8. Welding; 9. Brazing; 10. Forging; 11. Erecting; 12. Grinding.

The first work job in the list, "lathe," was analyzed into the following operations: 1. Chucking work; 2. Grinding tools; 3. Adjusting lathe; 4. Turning; 5. Measuring; 6. Finishing; 7. Removing from lathe.

In turn, the first operation on the above list, "chucking work," was analyzed into these operating points: 1. Gets chuck wrench; 2. Measures work; 3. Sets chuck jaws; 4. Places work in chuck; 5. Tightens jaws; 6. Starts lathe; 7. Tests work for rotating in proper position; 8. Stops lathe; 9. Adjusts position of work in chuck; 10. Places wrench on bench.

Manufacturing Department Analysis

A foreman from the manufacturing department of the Bemis Bros. Bag Company plant listed these pay-roll jobs: 1. Sewer; 2. Clipper; 3. Turner; 4. Inspector; 5. Cutter operator; 6. Calender man; 7. Baler; 8. Checker; 9. Sweeper; 10. Elevator man; 11. Timekeeper; 12. Machinist.

For pay-roll job "Sewer" these work jobs were listed: 1. Care of machine; 2. Threading machine; 3. Procuring bags; 4. Adjusting stitch; 5. Sewing bags.

Work job "care of machine" had the following operations: 1. Oiling; 2. Changing needle; 3. Cleaning machine; 4. Reporting out of order equipment; 5. Adjusting tension.

"Changing needle" required the following operating points: 1. Procures wrench; 2. Loosens needle clamp nut; 3. Removes needle; 4. Exchanges needles at machine shop; 5. Inserts needle in bar; 6. Tightens clamp nut; 7. Turns machine by hand before starting thread; 8. Replaces wrench.

Analyzing Cutting Department Jobs

A foreman from the cutting department listed three pay-roll jobs: burlap striper, hammers and cutter operator. The last was analyzed into three work jobs—cares for cutter, procures material and operates cutter. The last—operating cutter, was in turn analyzed into the following thirteen operations: 1.

Oils cutter; 2. Starts motor; 3. Starts cutter; 4. Off bears to truck; 5. Places truck in line; 6. Takes out unhemmed bag; 7. Answers girls' calls for things they need; 8. Keeps goods straight in; 9. Sews broken seams; 10. Takes out damaged bags; 11. Places spoiled goods in box; 12. Takes slack out of bias goods; 13. Stops motor.

The operation of "sewing broken seams" necessitated the following operating points: 1. Releases gripper rolls; 2. Pulls down burlap; 3. Takes to machine; 4. Starts sewing machine; 5. Sews seam; 6. Stops machine; 7. Straightens goods; 8. Starts gripper rolls.

Mechanical Jobs in Manufacturing Department

Two pay-roll jobs, that of machinist and helper, were analyzed by a foreman from the manufacturing department's mechanical branch. A machinist's work jobs were listed as: 1. Oiling turners; 2. Setting turners; 3. Repairing sewing machines; 4. Preparing new parts; 5. Repairing transmitters; 6. Repairing belts; 7. Oiling line shafts; 8. Upkeep of portable machine motors; 9. Repairing registers; 10. Replacing lost and broken spool holders; 11. Keeping records of used parts; 12. Keeping records of belts (length of service); 13. Instruction of new girls in oiling; 14. Resharpening cotton hand cutters; 15. Ordering new parts; 16. Supervising helper; 17. Repairing minor turner breakdowns and reporting major one.

"Setting turner" involved five operations: 1. Setting spreaders to width; 2. Setting turning arms to width; 3. Timing release cam to length of bag; 4. Timing fly cam; 5. Setting rollers.

"Setting rollers" required five operating points: 1. Procure wrench; 2. Loosen set screw; 3. Shift rollers to predetermined position; 4. Tighten set screws; 5. Replace wrench.

Analysis in Terms of Instruction Units

"One important objective brought out through the analysis of pay-roll jobs," it was pointed out at the conclusion of the conference at the Bemis Bros. Bag Company, "was the fact that many jobs which heretofore have been looked upon as requiring little skill or training do have a considerable number of operations for which the worker is responsible. The analysis also developed the fact that a man in a bossing job has instructional responsibilities as a rule and that these responsibilities vary with the number of 'green' men or women who must be trained. The analysis also served to direct attention toward the need for some consideration as to whether or not a foreman's time is distributed by a guess method or on the basis of operating points."

Realizing the important part played by the foreman's instructional responsibility, Mr. R. W. Jenkins had developed a type of analysis which emphasizes the instructional phases in a very striking manner. In the foregoing article, the writer reproduced an outline of the form used by Mr. Jenkins for making such an analysis. In this article let us reproduce a complete job analysis developed at the Miami Envelope Company plant, West Carrolton, Ohio.

At first the jobs are analyzed into department production jobs, work jobs and operations, as already noted at the beginning of this article. The analysis is then made from the point of instruction units.

Here is the first part of the analysis:

Name of Department.....

Department Production Jobs	Work Jobs	Operations
Placing rolls for loading reel	Placing rolls on bench	1. Put first roll next to reel 2. Place rolls on bench evenly 3. Place all rolls touching 4. Place rolls all one way on bench
Operating reel	Loading the reel	1. Release collars on shafts 2. Release shaft from reel 3. Pull shaft from core 4. Put shaft in roll 5. Place shaft back in holders on reel 6. Revolve reel by operating motor
	Adjusting rolls	1. Set roll of paper with line of outside slitter 2. Adjust other rolls with first roll
Operating cutter	Setting slitters	1. Release set screws on top and bottom of slitters 2. Set the bottom slitter according to order 3. Adjust top slitter to bottom slitter
	Start and stop cutter	1. Start motor 2. Use lever to adjust belt for operating clutch
	Putting sheet thru cutter	1. Carry sheet from roll to cutter 2. Readjust knife to correct length
	Setting knife	1. Adjust knife with hand wheel to near length desired 2. Readjust knife to correct length
	Squaring the sheet	1. Test sheet for squareness by folding 2. Adjust knife again if necessary
Handling paper from cutter	Laying up paper	1. Straighten paper in box as it comes from carrier 2. Sort paper for bad qualities
	Stack paper	1. Carry paper from cutter box to skid or truck

The second part of the analysis deals with the instruction units:

Name of Department: Finishing-Cutter.....

Instruction Units	Analysis of Instruction Units
Placing rolls on bench ready to mount one reel	1. Place first roll next to reel and evenly on bench 2. Place all rolls touching 3. Place all rolls one way on bench 4. Block last roll to prevent rolling off bench
Loading the reel	1. Release set screws in collars on the shafts 2. Pull pin and release shaft from reel 3. Pull shaft from core 4. Place cores on floor beside bench 5. Put shaft on roll 6. Place shaft back in holders on reel 7. Adjust reel with motor to receive shaft 8. Repeat until reel is loaded
Adjusting rolls on shafts	1. Set roll of paper with line of outside slitter 2. Adjust other rolls with first roll
Setting the slitters	1. Release set screws on top and bottom of slitters 2. Set bottom slitter according to order 3. Adjust top slitter to bottom slitter
Start and stop cutter	1. Start motor 2. Use lever to adjust belt for operating clutch
Putting sheet thru cutter	1. Carry sheet from roll to cutter 2. Adjust knife to correct length
Setting the knife	1. Adjust knife with hand wheel, to near length desired 2. Readjust knife to correct length
Squaring the sheet	1. Test sheet for squareness fy folding 2. Adjust knife again if necessary or if sheet is not squared

Editorial Comment

By WILLIAM SIBLEY

Evolution Not to Be Denied Industry

TURNING our backs on Dayton, Tennessee, and the folks there who were so ably reinforced by publicity agents, and turning to American industry, we find the principle of evolution not to be denied or withheld from our commercial progress.

The entire history of industrial America has for its foundation the philosophy of evolution. The constant urge for increased production, the increasing demand for finished products, and the necessity for improved methods, are the factors which have evolved our industry from its early "spawn" to its present stage of development.

Our industrial evolution, furthermore, has taken place very largely in the last few years. Every workingman is today producing three times as much as he did in 1900, for, while the personnel of manufacturing plants has doubled since 1900, the production has increased six fold.

In 1900, the per-man production of pig iron was 267 tons. Today it is 702 tons. The per-worker production in glass, in 1900, was 55 sq. ft. per hour, while today it is over 3,000 sq. ft. Newspapers have increased in circulation, per employee, in the last twenty-five years, over 2,500 per cent. The annual output of gasoline per employee in 1900 was 23,000 gallons—contrasted with the present day 75,000 gallons. Down in St. Louis there is a machine that will lift a 70-ton gondola car of coal from the track, turn it topsy-turvy, dump out the coal, then set the empty car back on the rails—in 60 seconds and with only one 35 H.P. motor and the assistance of one man. Up in the iron range of Minnesota, they are using electric shovels that scoop up 75 tons of ore at a single bite, while in Philadelphia certain dock equipment has released over a thousand men to more productive work, simply by doing with 12 men what formerly required the labor of nearly 1,100 men.

Within the memory of the majority of us, there have been developped electric motors, sewing machines, babbitt metal, "vulcanized" rubber, pneumatic riveters, adding machines, telephones, radio, automobiles, air brakes, automatic couplers, X-ray, linotype machines, hydraulic presses, nickel steel, ether, celluloid, the Suez Canal, cylinder presses, positive motion looms, player pianos, time locks, steam pressure gauges, CO_2 recorders, and countless other things considered basic necessities.

The one thing that has universally escaped us, however, is full realization of the fact that in manufacturing, as in selling, the basic principles are the same. Too many industrialists still believe their "problem is different." Too few manufacturers know they can learn valuable things from another manufacturer in an entirely extraneous field. As a matter of fact, there is a bond of relationship between every industry. In the manufacture of such wholly different products as ink, nitroglycerin, salad dressing, sugar, condensed milk and cement, several identical engineering chemical processes are used.

It would be extremely beneficial to both industry and individuals if manufacturers would visit, as often as possible, plants or factories outside their field. The paper manufacturer would profit by a tour through a candy factory, and the automobile maker would learn much to his benefit from a visit to a glass factory.

Dreams stimulate inspiration. Inspiration gives rise to invention. Invention improves methods or processes. Improvement cuts cost. Reduced costs increase profit. Larger profits bring greater effort. Larger efforts employ more men. Employment produces schools, institutes, galleries, and all other by-products of prosperity.

Half-Truths by Half-Bakes

ONE of the curses of the present times is the wide acceptance of half-truths. Because of the unreadable amount of reading matter that is foisted on the long suffering public every day and every month, we have become wont to skim the surface of things—to pass snap judgment.

Since the Great War, the Constitution of the United States has come in for a great deal of attention and discussion. Many people, sincere perhaps, but sadly deluded, would abolish that bulwark of our great republic. Others would amend it beyond recognition, thus accomplishing the same end as abolition.

In discussing the Constitution and the Declaration of Independence, some say we have lost the original provisions—that this is not a country where "all men are created equal."

Certainly not! At no time did anyone ever entertain the idea that ours would be a nation where "all men are created equal." What our forefathers who framed the Constitution **did** say was: "All men are created equal **before the law.**" And we submit there is quite a difference.

There are those among us who find delight in pointing out our lack of liberty—blaming that lack on the Constitution. The men who, after such great strife and effort, brought forth the Constitution, held in far

—— on Timely Subjects

greater respect the word "liberty" than we do today. They used the word wisely and judiciously—not freely and promiscuously. They promised no liberty. They did promise the **blessings** of liberty. And again we submit there is quite a difference.

All those who utter half-truths with respect to our form of government—let us put them down as half-baked. For such they are.

An Open Suggestion to Mr. Leopold Schepp

JUST a few weeks ago, Leopold Schepp, aged 85, requested expressions of opinion from the public at large as to the best method to employ in making disposition of his large fortune, amassed through the sale of the products of the coconut palm.

At just about the same time, the Forest Service of the Department of Agriculture, issued a report which disclosed the startling fact that during 1924, 29 million acres of public and private lands had been swept by forest fires, and that the actual money damage to standing timber was in excess of $38,000,000. This figure was given as exclusive of the damage to young growth, watershed protection, recreational facilities and wild life.

Since there is no single economic crisis confronting this country which equals in importance the present destruction of our forests, we suggest to Mr. Schepp that he use his wealth to create a public sentiment favorable to reforestation plans. No political party has yet included reforestation as a plank in their platforms. As yet no state has voiced a determination to put trees back on the hills that are fit only for timber growth. Before we can have a definite reforestation plan or attempt its fulfillment, we must have favorable public sentiment. The Schepp millions might well be used to that purpose.

Our country is not lacking in educational facilities; the Rockefeller millions are pushing medical research work to the benefit of every human being; our charitable facilities are adequate; while the country is under-hospitalized, that field of endeavor can well grow of its own accord; our art galleries are ample and the field of philanthropy is dotted with donors. In the field of reforestation alone, no outstanding effort has been expended. The country is even now suffering from ruthless and greedy citizens, ignorance, avarice and preventable fires. To make the woodlands return would confer a blessing on every one of our 110 millions.

Can Mr. Schepp conceive a better use for his millions?

Opinions by Economists

Babson:

During the ensuing few months, general business will follow the medium course of the past few months. Neither a boom nor a severe decline is ahead. The possibility of railroad labor troubles may cause an increase in production and demand, however.

Alexander Hamilton:

A good volume of manufacturing production is expected during the last four months of 1925. The plentiful supply of money will prevent any decided depression, and production capacity will forestall any large boom. Steel prices are expected to be sufficiently low to encourage buying by railroads.

Brookmire:

The coming months will be characterized by slightly greater industrial activity in this country than that now in evidence. Relatively stable finished product prices and slightly higher raw material prices are expected. While good profits are in view, vigorous selling effort will be necessary to obtain them.

Bankers-Economic:

No hectic boom is ahead, but business will probably continue its gradual and healthy improvement. Public opinion now seems to be favoring fairer treatment of the railroads.

Gibson:

General business may be expected to continue its existing improvement, but there is still some readjustment to be accomplished. Crop prospects are at the present time appearing more favorable, and the credit, political and foreign situation are all favorable from a business viewpoint.

Harvard:

Trade will continue in good volume, but it will not reach abnormal levels. The outlook is for a continuation of a large volume of business during the last months of 1925. The near future holds out no sound reasons for a general rise in commodity prices.

Moody:

With a plethora of capital, and a usual increase from summer to autumn trade, exceptionally good business is expected this fall. Both wholesale and retail distribution are showing constructive tendencies at the present time.

United Business Service:

A distinctly better undertone in practically all departments of business is becoming evident. Indications are that the low point of the year has been passed. Industry is more active than a year ago. and should at least maintain its current rate of activity through the fall.

Practical Helps for the Mill Man

A Stimulator for Interest in Safety

TO KEEP up interest in safety work an eastern mill offers a prize in the following manner:

Every Monday morning a name is drawn from the list of employes and this man questioned by the safety committee. The aim is to prove that—

1. He has spoken to a fellow employe about the contest or the safe way of doing his work.

2. He knows what the score is on the bulletin board outside of the finishing room.

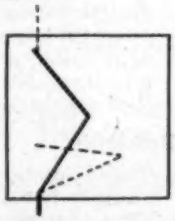
3. He knows what bulletins have been posted in his department during the past week.

4. He knows how many safety letters have been given out during the past week and what they were about.

If the person who has been drawn can answer the questions satisfactorily he will be given a prize, and one worth while.

Siphon for Clear Bleach Liquor

IN place of the straight siphon pipe ordinarily used in siphoning off clear bleach liquor from the settling tanks, a pipe with two ells fitted to make a loose joint in the middle has been used with advantage. This enables the operator to get a straight pull up on the pipe, which is very desirable, as the pipe is heavy and it is sometimes difficult to get a secure footing.



Float for Bleach Liquor Siphon

A LARGE float fastened to the end of the siphon pipe, which will raise and lower the pipe with the level in the tank while the clear bleach liquor is being siphoned off, has helped the operator materially. This makes it unnecessary for him to watch the level closely and lower the pipe accordingly.

Shield for Paper Rolls

THE use of the shield shown in the sketch to protect the edges of rolls at the corner of the pile while being stored has prevented a large amount of paper from being damaged. A piece of sheet metal about 18 inches long and 12 inches wide is bent lengthwise to form a right angle and a base soldered on the bottom.

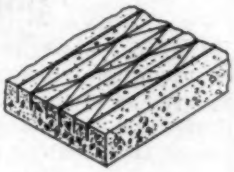
Bleach Making Plant in Frank Smith Paper Mill

IN VIEW of the increasing interest in the economical bleaching of pulp, one of the many interesting features in the new Frank Smith paper mill, in Middletown, Ohio, is the layout of the bleach-making plant, which is designed for particularly economical operation. The plant is designed for the use of liquid chlorine and to meet the requirements for bleaching 100 tons of pulp daily. The equipment consists of an electro-bleaching gas absorption tower system with two 30-inch absorption towers, one 12,000-gallon mixing tank, six 12,000-gallon settling tanks fitted with agitators driven from the bottom, and six 12,000-gallon storage tanks located under the settling tanks in the basement.

As indicated in the diagram, the liquid chlorine is taken from the tank car into the Wallace and Tiernan evaporators and the chlorine gas taken into the bottom of the absorption towers. Hydrate of lime is pumped by the circulating pump from the mixing tank into the top of the towers, which are filled with Maurice A. Knight tower filling. When sufficient chlorine has been absorbed the bleach is pumped over into the settling tanks. Clear bleach is taken from the top of the settling tanks into the cast-iron storage tanks below and from there is supplied to the mill.

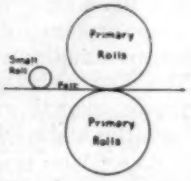
Trucking Floor for Paper Mill

EXCELLENT results have been obtained by using Irving subway or other open steel flooring, made up of narrow bars of steel placed on edge and set in the concrete floor. These floors have stood up under very heavy usage and are never slippery, because of the small amount of steel exposed—just enough to give a good footing.



Small Rolls for Board Machines

INSTEAD of the customary board which is used to hold down the felt at the primary press rolls on a cylinder machine, a small roll can be used which will save friction and prolong the life of the felt. Felts will not pick or mark with the use of these rolls.



A New Paper Handling Unit

LIFTSAVER MFG. CO., 30 Church St., N. Y., have recently developed a handling unit that particularly adapts itself to the needs of paper manufacturers and jobbers. The Liftsaver, an all-steel hand truck, has a collapsible extension which will permit truckman to load reams of paper, bundles of wall paper, etc., like on ordinary rack trucks without endangering the safety of the load. Simple attachments convert it into a gravity conveyer for unloading boxes, packages, etc., from trucks and cars. A distinctive feature is in the fact that the side appendages may be thrown back and locked, when desired, thereby increasing the leverage and capacity of the unit.

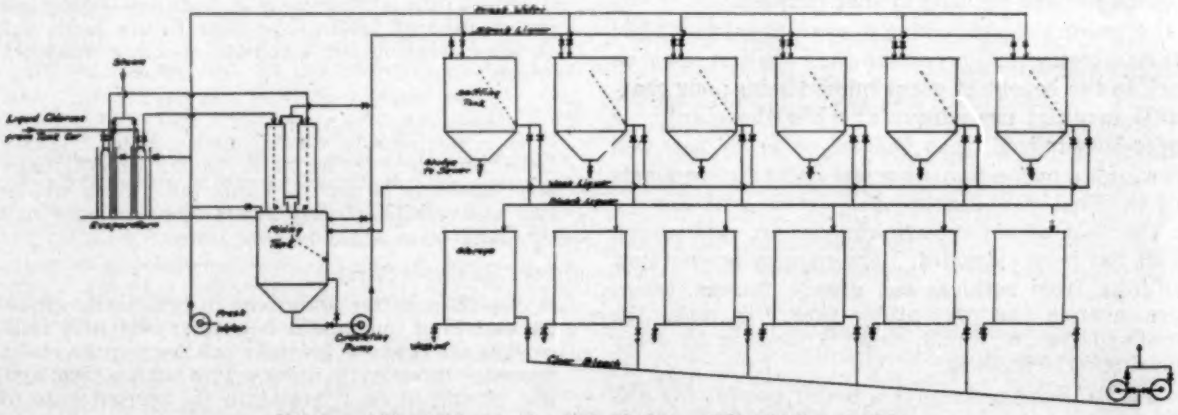


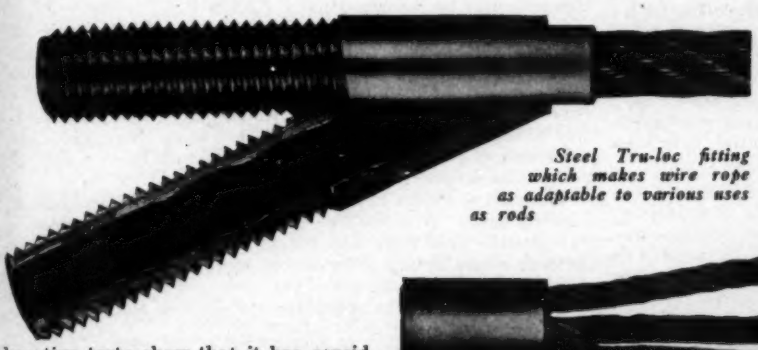
Diagram of bleach plant in Frank Smith Paper Mill, Middletown, Ohio

New Development in Wire Rope

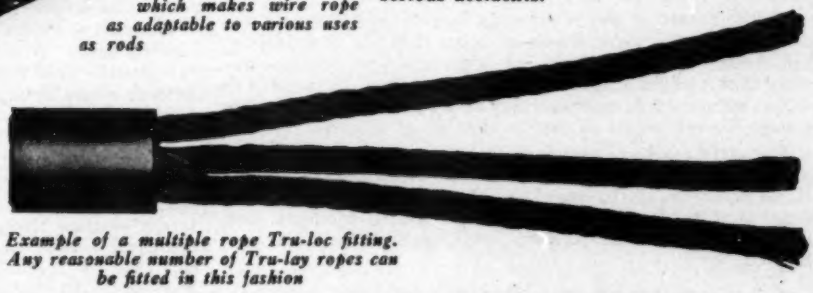
Of importance to the paper industry is the new wire rope recently developed by the American Cable Co., New York City, a rope which in method of construction represents the first basic change in wire rope manufacture in more than a century.

The new principle developed in the making of the rope is the "preforming" of wires and strands to the exact shape they must have to fit correctly in the completed product. The rope is being made in regular lays up to one inch in diameter and engineers concerned with its development for logging and hoisting purposes express satisfaction with its performance under exacting and strenuous tests.

An important characteristic of the Tru-lay rope is that it resists unstranding. It can be cut at any point for splicing and otherwise handled without the necessity of seizing. Exhaustive tests show that it has considerably longer life than ordinary rope under reversed bending stresses — an important asset where winding over sheaves and drums is a chief cause of wear.



Steel Tru-loc fitting which makes wire rope as adaptable to various uses as rods



Example of a multiple rope Tru-loc fitting. Any reasonable number of Tru-lay ropes can be fitted in this fashion

The preforming of the wires and strands in the rope results in evenly balancing the load on individual strands and in a remarkably uniform load distribution to single wires. The rope shows no tendency to high strand in actual use and has stood up satisfactorily in winding tests under heavy loads.

Broken wires in this new rope lie flat. Outer wires on cables, broken by long wear or abrasion, cause considerable trouble and often necessitate the removal of the rope before it should be discarded. The outer wires of the Tru-lay rope show no tendency to fray out of the rope body. They continue in their places, thus lessening the wear on other wires and on sheaves and drums. The fact that the rope does not unstrand makes splicing a comparatively simple operation.

Hexagon Tru-loc fitting which makes wire rope as adaptable to various uses as rods

Tru-lay rope with a threaded hexagon Tru-loc fitting permitting the application of shackle as shown, or turnbuckles, rods, etc.

To make available practically the entire strength of the new rope, the American Cable Co. has developed for it a special steel fitting, without zinc, called Tru-loc. The Tru-loc fitting has not only proved dependable under ordinary conditions, but also permits the use of turnbuckles, shackles and other equipment.

A steel sleeve is slipped over the smooth unseized end of the rope, placed in a specially designed press, and made to "flow" down upon the rope until it grips wires and strands. These sleeves may be of any reasonable length—can be threaded, can be equipped with heads of various types for wrenches, or furnished with eyes or hooks. The fitting is lighter, less bulky and has been found to be more dependable than the old-style zinc socket, probably because of the greater equalization of load on wires and strands.

Shackles or yokes can be fitted directly to the rope as shown

Dependable wire rope is an important asset in the efficient operation of locomotive and crawling tractor cranes and Tru-lay rope is being recommended for these uses because of its unusual wearing qualities.

Groups talking near a busy operator may cause his mind to leave his work and cause serious accidents.

New Automatic Belt Contactor

The "U. G." Automatic Contactor for belt drives is a new device manufactured by T. B. Wood's Sons Co., Chambersburg, Pa. It is a modern refinement of the old swinging type belt tightener, which was used to make a tight belt tighter with all the disadvantages this condition creates. The "U. G." Contactor does not do this, but accomplishes its results in a different way.

Tractive effort is increased by wrapping the belt around pulleys, by increasing the arc of contact, and not by setting up heavy and destructive initial belt tension. With the "U. G." Contactor the result is an increased arc of contact and a reduction in belt tension, with a constant tension in slack side of belt, not more than half the tension that is in the slack side of an open belt when at work.

This is accomplished by the contactor pulley automatically swinging around between the driving and driven pulleys. The pulley, weights and arms of the contactor are so designed that a constant tension is maintained in the slack side of belt as the load increases or decreases.

Short center drives, once considered impossible and ratios of pulley diameters said to be impractical may now be installed and operated with the aid of the "U. G." Contactor with even greater satisfaction and more efficiency than long center open belt drives.

Tappi Fall Meeting

The Technical Association will hold its fall meeting in Kalamazoo, Mich., at the Park-American Hotel, on October 6 and 7, 1925. There will be three general sessions to discuss the subjects of Paper Testing, White Water Waste and Paper Drying.

F. C. Clark, secretary of Hawthorne Paper Company, a former vice-president of the association, is in charge of the local arrangements. The fall dinner will be held in the Park-American on the evening of October 6. George K. Spence, president of the association, will preside.

The members and their friends who are in attendance will make their own hotel reservations and arrange to visit the mills in the vicinity following the fall meeting.

Summer Meeting of the Canadian Woodlands Section

FOLLOWING the summer meeting of the Technical Section in June, the Woodlands Section of the Canadian Pulp & Paper Association held a summer meeting in July. This was the first Woodlands summer meeting, and if the sentiments of those present are to be taken as guide, it can be safely forecast that it will be followed by many others.

The meeting took place under exceptionally favorable conditions, for the section was entertained by the Abitibi Power & Paper Co., who provided every facility for inspecting their system of logging operations, which has many interesting features. It was an important meeting for two reasons:

1—The delegates had an opportunity to look over the recently constructed logging railroad, Abitibi being one of the few companies logging by rail, and they also were privileged to see large scale towing operations on Lake Abitibi, very few Canadian companies carrying out such operations.

2—The future of the Woodlands Section was discussed by the delegates, the general opinion being that the organization had already demonstrated its use, although there was a possibility that it might still further prove its value to the industry, either by more frequent meetings or by greater co-operation among the companies in the distribution of information.

The party reached Iroquois Falls on the evening of the 26th of July, and were met by R. A. McInnis, mill manager, and by H. G. Schanche, chairman of the Woodlands Section, who is director of woodlands operations of the Abitibi company, and also manager of the Abitibi Transportation and Navigation Co.

An Insight Into Abitibi's Logging Operations

On Monday morning they visited the logging railroad, and the nature of the operations carried out during the logging season were explained. At present the company are building spur tracks, and the track-laying operations proved most interesting. The train then proceeded via the logging road and the Canadian National Railways to Low Bush, near the head of Upper Lake Abitibi, where the travelers had lunch prior to inspection of operations on the lake.

Four motor boats took them out on Lake Abitibi, where they had a chance to see towing operations and went aboard the Alligator Dokis, which had a tow of 3,500 cords close to the mouth of the Abitibi river. When handling such large rafts the tug casts off an anchor about a mile down the lake from the raft, and then backs up to the raft while paying out a heavy steel cable. When the tow lines have been made fast, the steel cable from the anchor is wound on a powerful windlass. When the anchor is reached the operations are repeated until the raft has been brought to the outlet of the lake. The raft is then broken up and the current carries the logs down within ten miles of Twin Falls. Here there is a lake about ten miles long, formed by the water held back by the dam at Twin Falls, and towing operations must be resumed. The logs are sluiced past the dam and are floated right down to the mill pond.

After getting data and information on towing, the party proceeded down the river in the motor boats and they made another stop on the F. H. Anson, a fine oil-burning tug, which had a tow of 4,000 cords headed for Twin Falls. The next stop was at Twin Falls, where the visitors were greatly interested in the floating dry dock and power house. Dinner was served at the woods department camps, and the party returned to Iroquois Falls by automobile, having traveled some eighty miles during the day, of which thirty-five were on the lake and river.

Business and Discussions

On Tuesday morning a business session was held, with H. G. Schanche in the chair and Edward Beck and A. E. Cadman acting as secretaries.

Mr. Schanche brought up first the question of whether the functions of the Woodlands Section could be broadened and a more definite plan drawn up for its activities in the interests of the industry, and there ensued a lively discussion, in which Messrs. Bowden, Kane, Davis, Benson and Johnson took part. Two ideas were brought out:

1—To have more meetings on the operations, instead of simply meeting in Montreal once a year during the annual convention of the association.

2—Before the next annual meeting to make a survey of operations of all companies, including major equipment, logging methods, etc., to see if an additional field of active endeavor would not open up further action.

Mr. Bowden, seconded by Mr. Kane, moved that the executive of the section appoint a committee to go thoroughly into the question of the function of the Woodlands Section and report at the annual meeting.

The next question brought up was that of an exchange of logging costs. A committee is already in existence which is expected to deal with this, but it has not been functioning, as there seems to be a difference of opinion with regard to this matter. The chairman asked the members for an expression of opinion to help the committee to develop along the lines required.

Major Benson, of Riordon's, thought no adequate comparison of costs could be made when every company used a different system; there would have to be a standardization of the costs system and logging. Mr. Wallace, of Laurentide, felt that the conditions of operation on the different limits were so unlike that a detailed comparison of costs was of no value. He thought that only a comparison of costs on specific jobs which were comparable to those of another company would be feasible. The general opinion of the meeting seemed to be that unit costs without great detail would be of value and that the different companies would be willing to supply them. The committee was accordingly instructed to function along these lines.

After the business session there was a luncheon at the Hotel Iroquois, and the afternoon was devoted to golf, tennis, etc., or to a visit to the mill, which is the largest single pulp and paper mill under one roof in the world, with a capacity of 510 tons of groundwood, 140 tons of sulphite, 500 tons of newsprint and 30 tons of wrapping paper per day.

The delegates were entertained at dinner at the homes of the various members of the woods department staff, and greatly appreciated this opportunity of becoming more intimately acquainted with their hosts. The smoker was most enjoyable, and voted by all a huge success. Jimmy Rice had gone up from Montreal for the occasion and he kept everybody roaring with laughter.

Wednesday morning was devoted to inspection of the railway and logging equipment of the yards, and after lunch at the Iroquois hotel the visitors departed on the noon train thoroughly content with their splendid outing.

List of Those Present

F. M. Benson, Riordon Co.; E. P. Cameron and F. G. Marriott, Forest Products Laboratory; R. H. Nesbit and A. Kayne, Price Bros. Co.; J. R. Wallace and W. McE. Bowden, Laurentide Co.; J. W. Wiswall and P. W. Buchanan, Brompton Pulp & Paper Co.; C. G. Levie, St. Regis Paper Co.; J. J. Harpell, Gardenvale; E. J. Zavitz, Provincial Forester, Ont.; C. A. Gardner, Provincial Paper Co., Port Arthur; R. L. Seaborn, Donnacona Paper Co.; F. N. Johnson, J. R. Booth, Ltd.; R. D. Craig and Clyde Leavitt, Ottawa; E. K. Robinson, Howard Smith Paper Mills; J. D. Gilmour, Anglo-Newfoundland Co.; Mr. F. Cooper, Spanish River Pulp & Paper Co.; W. L. Miller, University of Toronto; Edward Beck and A. E. Cadman, C. P. & P. A.

News Briefs from Washington

Paper Testing Program

A meeting was held in Washington, D. C., on July 27, on paper testing. B. W. Scribner, chief of the paper section, U. S. Bureau of Standards, is the chairman of the committee. Those present were E. A. Bergholtz, Helen U. Kiely, H. N. Lee, H. L. Peckham, A. T. Randall and E. O. Reed. W. G. MacNaughton, secretary of TAPPI, was also present.

A program of the work of the committee was formulated and approved. This will consist chiefly in standardizing the paper testing methods, which were published in 1920 and revised in 1922, to their present form.

Program of Work for Paper Testing Committee of TAPPI

"Much confusion exists at the present time in respect to units of expression of test values, basis of expression of weight, humidity conditions for physical tests, methods and instruments best adapted for specific purposes, etc. Methods of sampling need specifications also. It is believed, therefore, that the committee can render the best service at the present time by more definitely specifying how tests already available shall be made, rather than developing new methods. Some work in the latter direction will be necessary, of course, where tests urgently needed are not available. The report[1] of the committee of the paper industry, which collaborated with the Bureau of Standards in its work on technical standardization, is an illustration of work that should be extended through the entire paper testing field.

"While much information is available for immediate use, it will readily be appreciated that for the purpose of completely defining even the simplest and best known test method, considerable co-operative research will be necessary. In many cases comparative data from a number of different laboratories will be necessary. The work for the present, therefore, will be largely of a routine nature, but of quite considerable volume. For this reason it is necessary that each different phase be handled by a sub-committee, each of which will prepare recommended methods to be submitted to all members of the association for their comments and suggestions. It is hoped that frequent meetings of the chairmen of these committees may be held for presentation and discussion of progress reports.

"In addition to this work, it seems advisable to have a sub-committee working in the direction of correlating test methods and specific uses of papers, as there is urgent need of such information. This will involve in many cases development of special test methods. It is planned to have this committee composed of members especially acquainted with specific paper products."

Sub-Committee I, Microscopical

H. N. Lee, Chairman

1. Preparation slides
2. Count methods (general, and as modified by Spence and Kraus and others)
3. Estimation method
4. Stains
   (a) For general purposes—Herzberg, Sutermeister, etc.
   (b) For special purposes—Lofton-Merrit, sulphate
   Phloroglucine, groundwood
   C. G. Bright, bleached and unbleached
   Alexander, soda-sulphite
5. Foreign particles

Sub-Committee II, Physical

H. U. Kiely, Chairman

1. General
   Standard humidity
2. Weight
   (Use of basic weight area adopted by industry, i. e., 25x40 inches, 500 sheets)
3. Thickness (units)
4. Bursting strength (units)
5. Bulk (units)
6. Tensile strength (units)
7. Folding endurance
8. Tearing strength (units)
9. Machine direction
10. Dirt count

Sub-Committee III, Chemical

M. L. Caust, Chairman

Note: Qualitative and quantitative tests both to be considered.

1. Filler
2. Acidity
3. Paraffin
4. Sizing material
5. Degree of sizing
   (a) Beater sizing
   (b) Surface sizing
6. Chlorides
7. Coating material
8. Sulphur
9. Water resistance
10. Grease resistance

Sub-Committee IV, Optical Testing

O. W. Callighan, Chairman

1. Color
   Study of the various colorimeters for comparative value. Standard expressions of results of color tests
2. Gloss (Ingersoll glarimeter)
3. Opacity
   Study of instruments for comparative value. Standard expressions of opacity tests
4. Fading tests

Sub-Committee V, Tests of Paper for Special Uses

E. A. Bergholtz, Chairman

1. Water resistance (glassine, greaseproof, vegetable parchments, waterproof case lining, waxed)
2. Grease resistance (glassine, greaseproof, vegetable parchment, waxed)
3. Absorbency (blotting, towels, etc.)
4. Pick test (coated)
5. Ink penetration (printing)
6. Metallic particles (insulating)
7. Metal tarnishing (anti-tarnish wrapping)
8. Bursting strength (corrugated board)
9. Stiffness (bristols, folders, etc.)
10. Resistance to alkali (soap wrappers)

Mr. Scribner and his committee, which is composed of the chairmen of the sub-committees, is very desirous of receiving comments on the present paper testing methods, with suggestions for their improvement as well as additional methods for official adoption by the Technical Association.

Paper Testing Committee

Chairman, B. W. Scribner, U. S. Bureau of Standards, Washington, D. C.

H. N. Lee, Hammermill Paper Company, Erie Pa. (chairman Sub-Committee I on Microscopical Testing).

H. U. Kiely, American Writing Paper Company, Holyoke, Mass. (chairman Sub-Committee II on Physical Testing).

M. L. Caust, Tileston & Hollingsworth Company, Hyde Park, Mass. (chairman Sub-Committee III on Chemical Testing).

O. W. Callighan, Allied Paper Mills, Kalamazoo, Mich. (chairman Sub-Committee IV on Optical Testing).

E. A. Bergholtz, American Telephone & Telegraph Company, New York, N. Y. (chairman Sub-Committee V on Tests for Special Uses of Paper).

[1] Report of Sectional Committee on Technical Specifications, by R. S. Hatch, Chairman; issued by the Committee appointed by the Bureau of Standards, August 30, 1921—Simplification of Paper Sizes and Other Data.

Gluttons for Work

No. 77—Beloit Duplex Stuff Pump

Made in sizes 6x14", 7x16", 8x18". SPECIFICATIONS —Plungers, ball valves and seats, bronze; bronze bearings on crank pins; strap and gib keyed; crosshead bearings bronze brushed; self-oiling guide; suction and discharge separate or connected; easy of access. Weight 3,500 to 5,000 lbs.

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The Fordson Snow-Motor

A Machine That Solves the Snow Problem in Winter Operations

By GEORGE R. CULLEN

THE Fordson snow-motor, which is now being manufactured by Snow-Motors, Inc., Detroit, Mich., is a machine for which many of our most important industries operating in northern latitudes have long waited. The deep snows of winter always prove a very serious handicap to many industries. It almost stops a few. Regardless of the various kinds of equipment which have hitherto been brought into action to assist industries in deep snow areas, the Fordson snow-motor, for the reasons here presented, will be found of great interest —not merely because it is a quite unique and wonderful machine with no counterpart, but for the more important reason that it offers a real and tangible solution to the problem of transportation over snow.

To date there have been printed numerous articles in trade, class, scientific and technical publications on the subject of snow removal programs, and the methods, equipment and costs incident to the clearance of snow from city and rural roads. A study of these very illuminating articles makes it clear that the snow problem is far from being solved; that sufficient progress has not yet been made in battling with snow to arrive at very definite conclusions. And there also seems to be quite a variance of viewpoint among experts as to whether the removal of snow, especially on rural roads, is advantageous or otherwise.

One rather definite conclusion, however, stands out, which is that the drivers of automotive equipment, who pay licenses to the state for the privilege, are entitled to the use of it all the year round. Likewise industry, which is heavily taxed, is admittedly entitled to an open road to transport its product in all seasons.

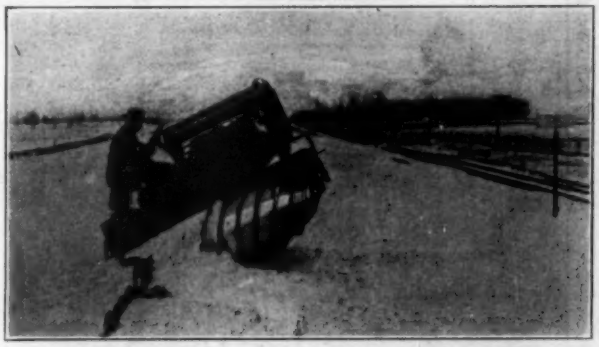
Discussion of this question has, in the past, dealt with ways and means of keeping traffic open by the removal of the snow.

The introduction of the Fordson snow-motor brings an entirely new element into consideration, for this machine

How the snow-motor does it

accomplishes the purpose of quickly re-establishing transportation over roads which are deeply covered with snow without removing any part of it. This machine has been known and given some attention in scientific magazines under the name of the Armstead Snow-Motor. A description of it was published in the November, 1923, issue of THE PAPER INDUSTRY. The machine has been perfected, changed in several essential particulars, and given the motive power of the Fordson tractor.

Inasmuch as the new Fordson snow-motor must inevitably be considered by all who have given thought to or participated in programs having for their object the keeping of public roads open during the heavy snow months, the story of its development to date may prove interesting. The machine in its original form was invented by an Alaskan miner and his associates who sought a better method of transport than the dog-teams which they drove back and forth over the snow-covered wildernesses of Alaska. These men devised a machine which would travel over snow, and it gave them very



Going over the top of a fence submerged in snow

dependable transportation for themselves and others, with supplies, to and from the mines. These men worked out the mechanical features of the machine and obtained letters patent on the invention. They then built some of these machines, more or less crude, but practical, and used them to great advantage. As built by them the machine had bob-sled steering equipment. The present machine does away with that arrangement, using drums for steering and the standard Fordson tractor for motive power.

Early Development

About ten years ago, Col. H. H. Armstead, a mining engineer who is very well known in mining circles within the United States and in countries beyond, saw one of these machines in operation, and was greatly impressed by it. He belonged to a large coterie of men in the mining game who, through the years, had been compelled to operate under the handicaps and shut-downs which the snows of winter bring to men engaged in extracting mineral wealth from beneath the ground in far northern latitudes.

Col. Armstead purchased the patents of the snow-motor from the inventor, and built a number of these machines for his mining operations in the Pacific Northwest. They attracted the attention of some of his friends in mining, lumber and other industries, who importuned him to have built and sell to them the mates to his machines. It was not long before he perceived that there was a ready market for these unique machines. Whereupon Col. Armstead sought his friend Robert L. Owen, United States Senator from Oklahoma, banker and capitalist, best known as the father of the Federal Reserve Banking System of the United States, whose vision of the possibilities of the snow-motor, led him to not only take a personal financial interest in the machine, but to attend the financial arrangements incident to the organization of a company for its development. These men spent several years and nearly half a million dollars in experiments and tests to make the machine perfect and commercially practical before beginning to manufacture it for a world that they knew needed it very greatly.

Remarkable Tests in the North

This preliminary work accomplished, snow-motors were given a thorough demonstration in the deep snow country of

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northern Michigan during the winter of 1924-25. Their performances were witnessed by several men of national renown in motor transportation development and manufacturing circles. These men were nearly transfixed with amazement when they saw what these machines could do. Several snow-motors, upon which were mounted Fordson tractors for driving power, and one with a light passenger automobile mounted on it, were run at varying speeds in deep snow-drifts over which they glided, or floated, with the greatest ease. In some of the places where those trials took place the snow was so deep that it all but covered the pickets of high fences. Snow-motors went over these drifts, pickets and all, as easily as a boat rides a wave. A big horse was brought to the scene and led into one of the deep drifts where he floundered helplessly, and was with difficulty gotten out where in less deep snow he could handle himself. There was no snow, or glassy ice, in that whole snow-bound region, which the snow-motors failed to negotiate in a most convincing manner. They literally "floated" over deep drifts of snow, and forged their way through thick underbrush in much the same way the military tanks went through and over every obstacle in World War days. In these final tests a single snow-motor, Fordson driven, transported heavy sled loads of logs, that would have taken several spans of teams to haul, from a logging camp to a terminal, fifty miles distant, breaking the road through the snow all the way, so that teams, automobiles, and other conveyances could later follow them over the trail. The snow-motor, with a light passenger car for motive power, dashed over the snow, no matter what the depth, at a speed of 24 miles an hour.

"The Last Link in the Chain of Transportation"

The transportation experts who witnessed these epochal performances up there in the snowy regions of Michigan, realized then and there that they were seeing the concluding tests of a machine that was destined to accomplish a long-delayed mission in the world. These men saw snow-motors in the light of road-breakers and road-makers in all deep snow areas, a new revolutionizing power in all northern lands where, from time immemorial, business had been stopped and men made idle because no effectual method had been devised which could overcome the conquering power of the winter elements. One of the men who witnessed these trials was Howard E. Coffin, a pioneer in transportation development, through motor cars and aircraft, who sagely remarked, "Here is the last link in the chain of transportation."

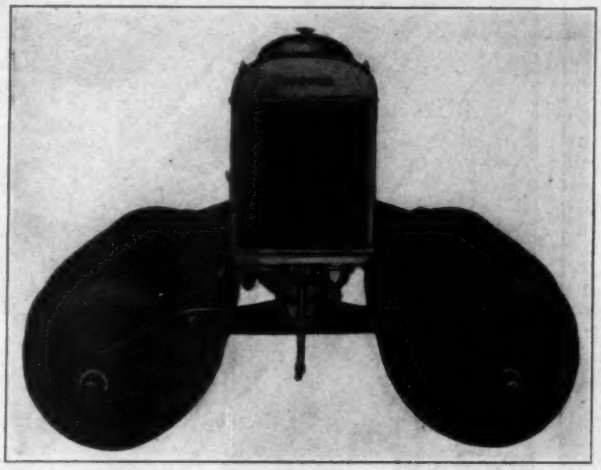
The Men Who Are Manufacturing Snow-Motors

Out of this expedition to northern Michigan was born a new corporation, Snow-Motors, Inc., a soundly financed organization which today is engaged in building the Fordson snow-motor at the nation's automobile manufacturing hub, Detroit, Michigan. This company is headed by A. F. Knoblock, as president and general manager, one of the veterans of the automobile business, having furnished engine parts to Henry Ford when he was developing his first two-cylinder car; who was associated with the General Motors Corporation for many years as the executive head of the Northway Motor Company, and who, during the World War, was in charge of the production of tanks for the United States Army. The Vice-President is Col. H. H. Armstead, noted mining engineer, officer of the Federal Reserve Corps, and original purchaser of the snow-motor patents. The secretary-treasurer is Harold H. Emmons, former president of the Detroit Board of Commerce, and prominently identified with the development of the famous Liberty motor during the World War. The directors and stockholders of Snow-Motors, Inc., include William S. Knudsen, president of Chevrolet Motors; Howard E. Coffin, vice-president of the Hudson Motor Car Co.; Hon. Robert L. Owen, United States Senator; Frank F. Beall, vice-president of Gray Motor Car Co.; Frederick J. Haynes, president of Dodge Bros., Inc.; Hon. Edwin Denby, former secretary of the Navy; Charles B. Bohn, president of Bohn Aluminum & Brass Corporation; A. T. Waterfall, vice-president of Dodge Bros., Inc., and a number of other prominent automobile men.

Each one of these men is taking a personal interest in the manufacturing of snow-motors not only because of the soundness of the proposition from a pure business standpoint, but also for the greater reason that they see in snow-motors a very great benefit and service to the people of all the northern areas of the world where deep snow has blighted effort and stopped progress.

A New Principle

The initial driving power of the snow-motor will be the standard Fordson tractor. Stripped of this motive power, the machine consists of two torpedo-shaped drums, to which flanges or spiral runners (sometimes called "skates") are welded. These drums, which are chain driven, resolve in opposite directions, the spiral on one being right-handed and that on the other being left-handed. The torpedo-shaped ends of these drums and the spiral flanges engage positively with the snow or ice and, owing to the balanced thrust of one against the other, propel the snow-motor on a straight course,



Front view of Fordson snow-motor

forward or reverse. Steering is effected by controlling the drive to one or the other of the drums. The action of the drums on the snow is virtually that of a worm and worm wheel, where the worm is formed by the spirals on the drum and the wheel, by that frictionless material, snow.

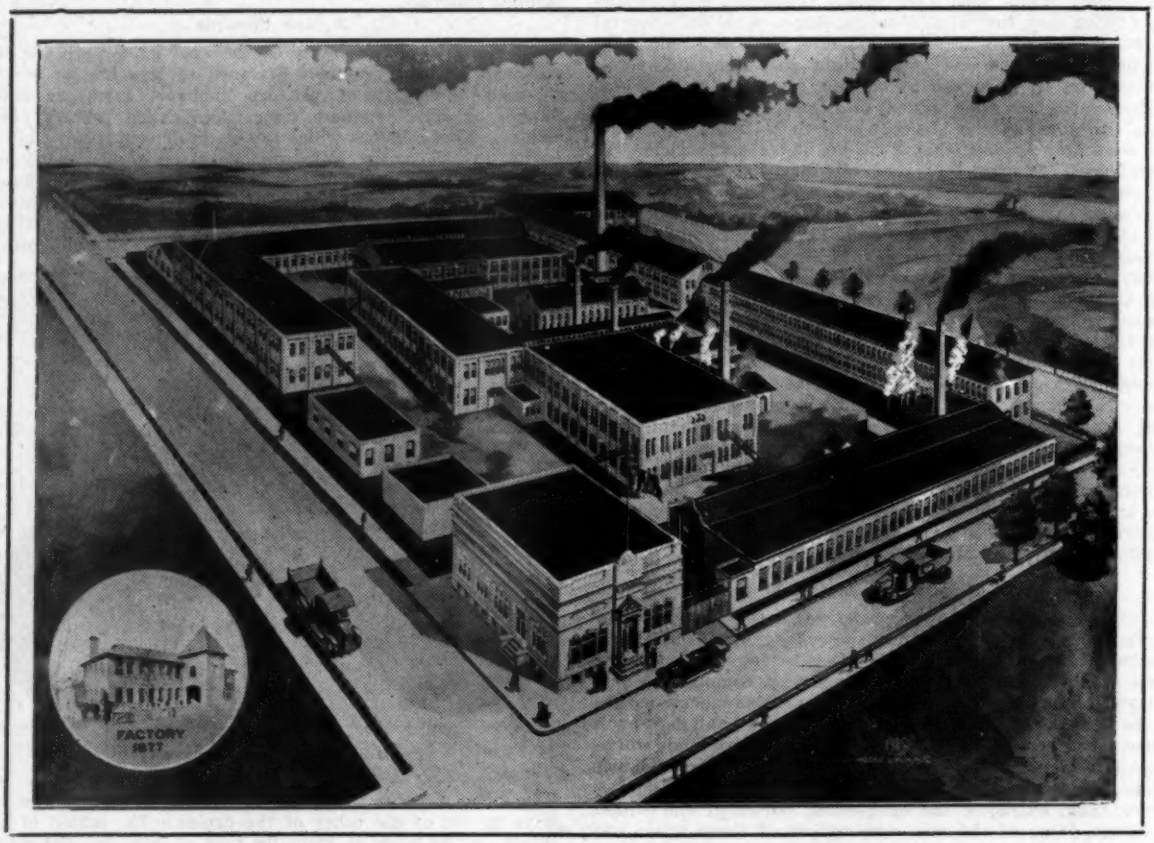
How the Fordson Snow-Motor "Digs Out"

This explains only the method of propulsion. The important feature which saves the snow-motor from the fate of the wheeled vehicle, or the horse, is its action in soft snow. Where other vehicles dig themselves in, the snow-motor digs itself out. When the drums are running on ice, the contact area is very small, as with skates. When they come to snow, they sink in, packing the snow down and, at the same time, increasing the bearing surface until it becomes sufficient to carry the weight of the machine. Further, as the weight bearing surface is increased, so also is the propelling surface of the flanges increased. The snow-motor is driven just the same as the Fordson would be driven if it were not mounted on the snow-motor, the regular controls being used. The machine has a wide track on each side, the tread being 58 inches between the centers of the drums which are 30 inches in diameter. The whole power is behind the steering, giving it wonderful ability to maneuver. Owing to its very flexible construction it is easily managed, and it can be swung around in its own length. Any standard Fordson tractor can be used on the snow-motor by removing the wheels and axle, which can be replaced when the tractor is needed again for its regular summer use in agricultural or other work.

Will Help Many Industries

Obviously, the snow-motor will be welcomed in many fields of work which are hampered by snow every winter. It will be especially valuable in the forest operations of the pulp and paper industry, where difficulties are encountered in the transportation of pulpwood from the forest to the railroad or river through heavy drifts of snow that are the winter obstacles in the north woods.

There is being perfected a snow-motor upon which can be



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mounted any standard make of automobile or truck, up to 116-inch wheelbase, and be driven just the same, using the regular controls. The time is seen when many northern owners of automobiles will have a car permanently mounted on a snow-motor for winter use exclusively. Thus equipped the heavy snows of winter will lose their terrors for men who must get about in all weathers, for no depth or kind of snow, or ice or sleet can possibly stop the progress of these machines.

The future developments in snow-motors will prove of great interest to all who are concerned with the hitherto unsolved problem of winter transportation.

The Alfthan-Serlachius Process *

SOME time ago, notices appeared in the technical literature concerning the Alfthan-Serlachius process, by which sulphite pulp could be produced from resinous woods. The process was not described at the time; but since then the patents have been granted and the process has been published.

Description of the Process

It consists essentially in cooking the wood with an acid liquor containing a certain amount of sodium bisulphite in addition to the usual calcium bisulphite and free sulphurous acid. Cooking is carried out at a pressure of five to six atmospheres, which is somewhat higher than usual, while the final temperature is kept a little lower, namely at 130° to 150° C. Sometimes sodium sulphate may be used instead of sodium sulphite.

As soon as the digester has been filled with chips, sodium sulphite solution is added, the amount used being such that there is not more than one per cent of soda calculated on the quantity of pulp obtained from the cook. Finally, the regular sulphite liquor containing from 3.5 to 4.5 per cent of sulphurous acid and 0.8 to 1.5 per cent of lime combined with the sulphurous acid, is added.

The process is thus seen to depend on the introduction of a small proportion of sodium ions in ordinary sulphite liquor. The function of the sodium is to combine with the resins and convert them into soluble compounds which are easily eliminated by washing.

The advantages of the presence of soda in sulphite acid had already been observed by V. B. Drewsen and L. J. Dorenfelt, who took out an Austrian patent quite a long time ago covering the addition of sodium sulphate to the ordinary calcium bisulphite cooking acid so as to obtain a mixed sodium and calcium bisulphite liquor. According to the patent, two-thirds of the lime was replaced by soda, and the patentees claimed that a better and easier-bleaching pulp could thus be produced, and that cooking could be carried out for a longer time than usual without impairing the quality of the fibers. Provision was also made for the recovery of the soda by evaporation and incineration of the spent liquor. It was considered that the increase in the cost due to addition and recovery of the sodium sulphate would be compensated by the reduction in the bleach consumption and by the improved quality of the pulp which would be almost completely disincrusted.

Whatever we may think as regards the compensation of the increase in cost of production, it must certainly be admitted that the lime-soda-sulphite liquor makes a particularly good solvent for the incrustants of the wood.

Difference of the Alfthan-Serlachius Process

The main difference between the Drewsen-Dorenfelt process and the newer Alfthan process seems to lie in the fact that the latter uses a much smaller proportion of sodium bisulphite, as a result of which the expensive recovery process can be dispensed with and the increase in the cost of the liquor is practically negligible. The soda, however, small though be the quantity added, dissolves out the pine resins, as shown by the analyses carried out over a year ago at the Central Laboratory at Finland.

We think that these results are sufficiently interesting to warrant their reproduction in full, as they give an insight into what can be expected of the application of the process to the pulping of resinous pines. (It would probably be quite suitable for the treatment of jack pine.—Trans.)

Comparison of Pulp Samples

The G. A. Serlachius Aktiebolag submitted two samples of pulp, one of them being ordinary spruce sulphite, while the other was pine pulp obtained by the Alfthan process, as well as six samples of paper, two of newsprint, two of imitation parchment, and two of glassine. One sample of each grade was made with spruce sulphite while the other was made from Alfthan pine sulphite.

Analysis of the samples of pulp gave the following results:

	Pine Per cent	Spruce Per cent
Ash	0.69	0.63
	0.72	0.66
	0.71	0.65
Resins and Fat—Alcohol Extract	1.87	1.67
	1.82	1.62
	1.85	1.65
Ether Extract	1.42	1.34
	1.44	1.30
	1.43	1.32
Copper Number	1.43	2.16
	1.40	2.22
	1.42	2.19
Hydrolysis Value	5.17	5.47
	5.21	5.37
	5.19	5.42
Bleaching Quality—Chlorine Number (Tingle)	5.55	7.01
	5.33	6.92
	5.44	6.97

Bleaching test:

Chlorine Added	Chlorine Consumption Pine	Chlorine Consumption Spruce	Color of Bleached Pulp Pine	Color of Bleached Pulp Spruce
7.5%	6.07%	6.91%	08	10
10.0%	7.37%	8.60%	05	09-08
15.0%	9.68%	11.60%	05-04	04

The pine pulp had a slightly greyish tinge, and was entirely free from red. It was a very fine-looking pulp, free from shives and containing a few specks, which were probably particles of bark. The spruce was of the usual slightly reddish tinge, which is characteristic of strong unbleached spruce pulp. It also contained some specks but not as many as the pine pulp.

Under the microscope, the pine fibers appeared somewhat less impaired than the spruce fibers; but the difference between the two was very slight. Contrary to what was to be expected, the spruce pulp seemed to contain more fat and resins than the pine.

After beating for six hours and forty minutes the degree of beating was 86.0 and 87.5 and the breaking lengths 7,540 and 7,545 meters for the pine and spruce, respectively. These results are the averages of twenty determinations on each sample, and show that there is no difference between the two.

The pine pulp is a little more cooked than the spruce, and could almost be classed as easy-bleaching. On treating with a suitable amount of chlorine, it becomes exceptionally white. The spruce is not quite as well cooked and is a little harder to bleach.

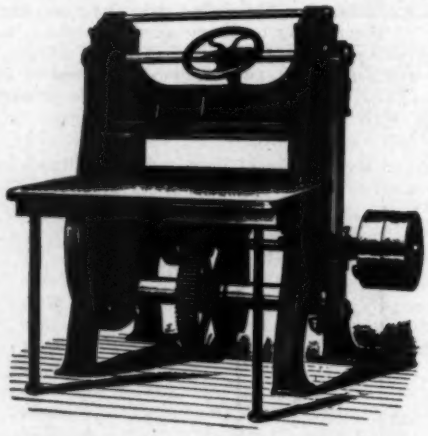
It is worth noting that the reducing power (copper number) of the pine pulp is much lower than that of the spruce pulp, and as a matter of fact it can be considered as exceptionally low.

The ash content of both samples is quite normal.

The fat and resin contents are somewhat higher than is usually the case in Finnish spruce sulphite; but it is really remarkable that the pine pulp should contain only 0.2 per cent more resins than the spruce pulp. And if we consider that the constitution of the fats and resins (which we did not investigate) is of much greater importance than the

* Translated from Le Papier xxviii, 335-338, March, 1925, by A. Papineau-Couture.

Kidder Die Press



For cutting envelopes, paper forms, rubber, leather and cardboard, the Kidder Die Press has proved an economy with many manufacturers who watch their costs closely.

It will help you to cut down the cost of production. It is well built and powerful. Made for long and continuous service with a minimum of power.

Complete information upon request.

Hobbs Manufacturing Company

Successors to Kidder Manufacturing Co.

Manufacturers of Kidder Die Presses, Improved Circular Sawing Machines, Boring Machines, Paper Box Machinery, Lock Washers, Rings, Cutter Pins.

Worcester, Mass.

Branch Offices:

160 Wooster St., New York

608 South Dearborn St., Chicago, Ill.

Established 1828

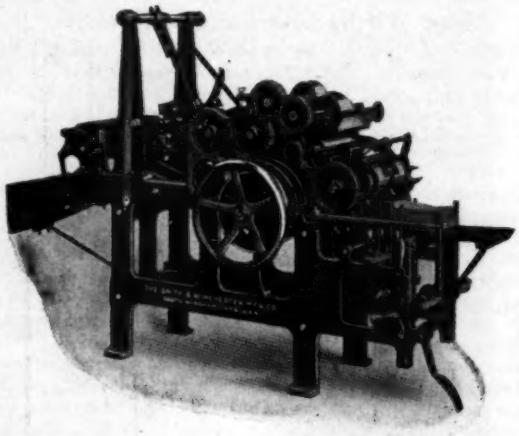
The

Smith & Winchester Mfg. Co.

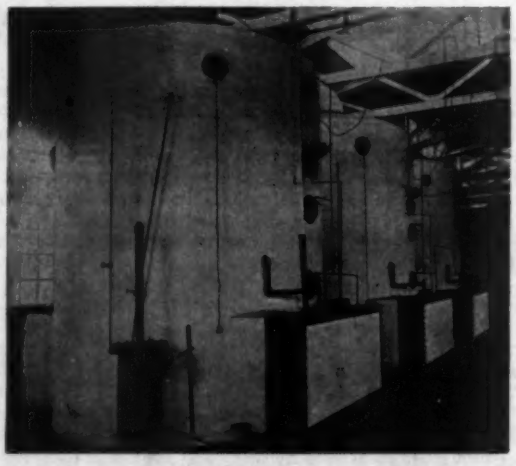
SOUTH WINDHAM, CONN.

Manufacturers of

Paper Making Machinery



Paper Bag Making Machinery



Triple effect illustrated above was installed fourteen years ago and is still going strong. As a result of its excellent work concentrating soda black liquor we have sold to the same concern sixteen large multiple effect evaporators.

FIFTY-EIGHT per cent of orders for Zaremba Evaporators are repeats. This is not due to superhuman salesmanship, but to the fact that they are designed to exactly suit conditions and are carefully constructed.

As a result Zaremba Evaporators have acquired an enviable and deserved reputation for efficiency, durability and reliability.

Evaporators

for Soda Black Liquor
Sulphate Black Liquor
Sulphite Waste Liquor

ZAREMBA COMPANY

506 Crosby Building BUFFALO, N. Y.

amount present, the difference between the two samples is quite negligible.

The strength tests show the two pulps to be equally good, while the microscope shows that the pine pulp is somewhat better, the fibers being less broken and containing less impurities.

Comparison of the Paper Samples

The weights per square meter and breaking lengths of these samples are as given in the following table:

Sample	Weight per Square Meter	Breaking Length in Meters Machine Direction	Cross Direction	Average
A. Newsprint (Pine)	53.6 g.	3898	1719	2809
A. Newsprint (Spruce).....	53.2	3618	1672	2645
B. Imitation Parchment (Pine)	25.7	5292	3611	4452
B. Imitation Parchment (Spruce)	24.2	6044	3372	4708
C. Glassine (Pine)	25.9	6142	4046	5094
C. Glassine (Spruce)	24.0	5711	4178	4945

The results on samples A are the average of ten tests in each direction, while for B and C they are the average of five tests in each direction.

The samples of newsprint were too small to allow of determining the groundwood content chemically, but a microscopic examination showed that the sample made with Alfthan pine pulp contained a little more groundwood than the one which had been made with spruce sulphite.

Microscopical examination of samples A and B showed nothing particularly worth noting, the appearance of the fibers being quite normal in every case. It was not found possible to prepare a slide for the microscopical examination of samples C on account of the excessive degree of beating.

None of the papers were hard sized, and no appreciable difference in sizing qualities were observed.

The general appearance of the papers made from pine and from spruce were the same.

The analysis and examination of these papers failed to reveal any difference in properties between those which had been made with pine pulp and those which had been manufactured from spruce pulp.

Generalization of the Process

It should not be too hastily inferred from the results which we have just described that Alfthan pine pulp can replace ordinary spruce sulphite in every case as efficiently as in the ones which have come under our notice. This point can only be definitely settled by the results which it will give in paper mill practice.

But our results would certainly indicate that Alfthan pine pulp will generally give the same results and impart the same properties to paper as spruce sulphite; and if these very encouraging results are borne out in practice the problem of finding adequate pulpwood supplies will be appreciably simplified.

For there are plenty of highly resinous pines which the sulphite mills would be only too ready to use if they could be pulped satisfactorily, and this would give a welcome relief to the fast-diminishing spruce forests. At the same time, the pulp could be produced more cheaply, as pine is cheaper than spruce.

It is quite legitimate to expect that progress in colloidal chemistry will soon show how to overcome the troubles caused by the presence of resins in pulp, and it is very likely that it will be possible in the near future to produce very good pulps from woods which up to the present had been considered unsuitable for the manufacture of sulphite.

The Gardner-Harvey Paper Company, of Middletown, Ohio, has installed at its No. 1 Mill three Taylor Stokers built by the American Engineering Co., of Philadelphia. These stokers are of the modern long type, with five retorts and 17 tuyeres each, and are in addition to a number of other Taylor stokers already in use by the Gardner-Harvey Company.

The next regular meeting of the Box Board Association is scheduled for Thursday, September 10, 1925, eleven o'clock A. M., Daylight Saving Time, at the Congress Hotel, Chicago.

Cause of Rosin on the Wires

A PACIFIC Coast correspondent asks if we can tell the cause of the appearance on the wires of the paper machines in his mill of a resinous accumulation at the suction boxes which causes trouble and loss of time in cleaning. He says that the pulp is thoroughly washed and no size is added to the stock. The resinous deposit has the appearance of a thin film of rubber and is slightly brittle. It happens in the case of newsprint as well as with kraft.

Our correspondent does not name the kind of wood he is using. The use of a highly resinous wood like jackpine is often to blame, and in the case of newsprint paper the groundwood may be at fault, especially where the green wood is used. Rosin or pitch is often retained in sulphite pulp which has been discharged from the digesters into cold water before being washed, but no matter how formed it is a perennial source of trouble.

A test of the pulp by extraction with ether should be made to determine the source of trouble and appropriate measures be taken to remedy it. After draining, the pulp should be well washed with very hot water.

Faults in the acid system may lead to the deposition of a brittle resinous compound on the wire near the suction boxes or on the couch and press rolls, the explanation being that insoluble calcium compounds like calcium sulphate and calcium monosulphite are formed when the burners are run with insufficient air so that sulphur is carried over into the pipes and towers. Or the trouble may be due to too much air being supplied to the sulphur burners so that sulphur trioxide is formed as a consequence of the oxygen of the air oxidizing the SO_2 into SO_3. Care should be taken to use a pure calcium stone in the tower as residues are formed when dolomite stone is used, the calcium and magnesium constituents of the stone having different solubilities in SO_2 gas and water. It should also be borne in mind that if the gas from the burners is too hot, calcium sulphite is liable to separate out and form a residue.

In every case where washing the pulp with very hot water fails to remedy the trouble, attention should be given to remedying defects in the sulphur burners.

In Fairness to Mr. Heaney

In our reports of the annual meeting of the Superintendents' Association at Niagara Falls at page 425 of the June issue of THE PAPER INDUSTRY, a slight inaccuracy crept in where it was stated that J. F. Heaney, construction engineer of the American Voith Contact Company, in describing the Voith caterpillar grinder "begged off when asked to answer some questions put by Jack O'Connell and others concerning the operation of the caterpillar grinder under certain conditions." Mr. Heaney reminds us that the questions did not refer to the operation of the grinder but were concerned with certain patent rights and these he preferred not to answer. We are glad to make this correction.

New Paper Mill for Niagara Wall Paper

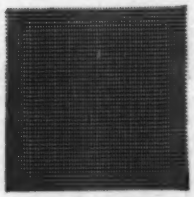
T. M. Uptegraff, vice-president and general manager of Niagara Wall and Defiance Paper Companies, has just announced the purchase of another paper mill at Niagara Falls, N. Y., namely, the Pettebone-Cataract Paper Co.

This mill is situated in a strategic position on the brink of the Niagara Gorge, and faces the enormous hydraulic basin, which forms the headwaters for the generators, which produce the tremendous power created at Niagara.

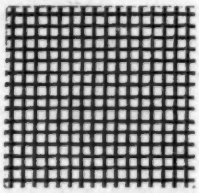
The mill's equipment consists of two 90-inch Fourdrinier paper machines, three large beaters, and two Jordans, with a daily output of 35 tons of paper a day, besides a ground-wood mill capable of producing 36,000 pounds of pulp every twenty-four hours.

This plant will be operated as a part of the Defiance Paper Company and raises the daily output of this concern to 85 tons—or over 28 carloads a week. The operations will be under the management and supervision of the executives of the Defiance Paper Company, and will be devoted to the manufacture of the same high-grade hanging and newsprint stock, which has built such an enviable reputation for the two parent companies.

FOURDRINIER WIRES



In Brass, Bronze and phosphor bronze, widths up to, and including 250 inches.



Also

CYLINDER FACES
WASHER WIRES
and CORDUROY CLOTH

THE
W. S. TYLER COMPANY
Cleveland, Ohio, U. S. A.

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

Railroad Tariff on Liquid Chlorine

The Interstate Commerce Commission has acted favorably on an application filed by The Mathieson Alkali Works, Inc., as leaders of a group of other manufacturers and users of liquid chlorine for a suspension of a tariff proposed by the railroads whereby higher charges could be assessed on multi-unit car shipments than are charged on like shipments in a single tank unit car. The case will now go before the Interstate Commerce Commission to be heard in full and adjudicated.

The Mathieson Alkali Works, Inc., express confidence in the favorable issue of the case and advise that the widespread protest of users, manufacturers and the national associations interested in the case had an important effect on the preliminary aspects of the hearing.

In a statement made by H. M. Mabey, general traffic manager of The Mathieson Alkali Works, Inc., under date of July 10, the issues at stake are clearly presented as follows:

"Under the Interstate Commerce Commission law, the railroads can collect no charge for any service unless that charge is specifically shown in a tariff which has been filed by them in accordance with the law.

"When our first multi-unit car was offered for transportation the railroads took the position that under their lawfully filed tariff they could assess charges on shipments of chlorine in multi-unit cars based upon the weight of the chlorine plus the weight of the container. At the same time they admitted that under their tariff the freight charges on chlorine shipped in a tank car would be based only upon the net weight of the chlorine and the tank car would be entitled to free empty return movement.

"Our complaint to the Interstate Commerce Commission therefore involved two issues:

"1. Were the charges assessed by the carriers on chlorine shipped in our multi-unit car lawful under their existing tariffs?

"2. Did the assessment of charges upon our multi-unit car on a higher basis than contemporaneusly assessed on like shipments in a single unit tank car violate the Interstate Commerce Commission Act as being prejudicial and discriminatory?

"The Interstate Commerce Commission in their former decision decided the first question in our favor. That is, that under their existing tariffs the carriers could not charge more on our multi-unit car than on the single unit tank car, and that in so doing they had collected charges unlawfully and must refund them, which the carriers did voluntarily.

"The first issue having been disposed of in this manner, it is apparent that the second issue was not present and therefore not before the commission for decision.

"What the carriers now propose to do is to correct their tariffs in such a manner that they can assess charges on the multi-unit car, including charges on the weight of the metal for both the loaded and empty movement. It is apparent, therefore, that with the filing of this tariff by the carriers and our protest, which has been filed with the commission, that the second issue is now before the commission for decision for the first time. That is, that the carriers' tariff violated the law in that the charges which they propose to assess on our multi-unit car to the extent that these charges are higher than they would contemporaneously assess on a single unit tank car are prejudicial and discriminatory and in violation of the Interstate Commerce Commission Act."

Outings of the employees of paper mills in and around Watertown have been held during the last month. About 350 members of the Hinde & Dauche force and their families attended the outing of that organization. Several sporting events were held. Over 600 attended the outing of the two mills of the Taggart Paper Company. The Watertown force was defeated by the Herrings force in a baseball game by a score of 5 to 2. The women of the two places clashed on the diamond and the score was 7 to 4 in favor of the Herrings women. The married men of the two mills met and the Watertown crowd won 10 to 0. The Watertown team won the tug of war.

Northern New York News

August 1, 1925.

Augsbury Heads Algonquin Company

Frank A. Augsbury, of Ogdensburg, vice president of the Algonquin Paper Corporation, of Ogdensburg, was elected president of the corporation by the directors at a meeting on July 25th. He succeeds George M. McKee as president of the company. Mr. McKee who has been president and general manager, recently accepted the presidency of the Port Alfred Pulp and Paper Corporation with headquarters in Montreal.

Stuart D. Lansing, president of the Bagley & Sewall Co., of Watertown, manufacturers of paper making machinery, was elected vice president to succeed Mr. Augsbury. William E. Westbrook was elected director and was also elected to the office of secretary and treasurer to succeed the late Edward L. Strong. Samuel M. Williams was elected general manager to succeed Mr. McKee and assumed his duties August 1. Fred L. Hogan, assistant manager, resigned his position, effective August 1.

Mr. Williams for many years has been in charge of the newsprint interests of the New York World publications and is president of the DeGrasse Paper Company at Pyrites, owned by the Pulitzer interests. The naming of Mr. Williams is said to mean a closer relationship between the New York World and the Algonquin mill. Before entering the newsprint business, Mr. Williams was in the news department of the World and was a close friend of the late James A. Outterson.

Mr. McKee came to Ogdensburg in 1922 to organize the Algonquin plant. He is a graduate of the Pennsylvania State college and has been connected with the paper industry since 1897. Before coming to Ogdensburg he was managing head of the Donnacona mill in Canada.

Mr. McKee said that he would retain his interest in the Algonquin plant and would continue to exercise general supervision of operations. The Port Alfred mill is located in the Lake St. John country, 150 miles from Quebec, where a huge power development is being completed by the Duke interests at a cost of $20,000,000.

St. Regis Plans to Cut Melon

Utility circles in the financial district are discussing the proposed plans of the St. Regis Paper Company to cut a $26,500,000 melon in the form of distributions of the company's large holdings in the Power Corporation of New York, consisting of 266,425 of the 578,698 shares of common stock. Power Corporation's common stock was recently increased to 750,000 shares, giving St. Regis Paper 293,065 shares with a current market value of $26,500,000.

It was figured that the St. Regis holdings of Power Corporation at present values would be equivalent to $65 a share on the 347,000 shares of St. Regis common stock. Adding to this the book value of $26 a share for the plant and other assets of the St. Regis company, the current assessed valuation of St. Regis common is about $91 a share. This does not take into account the earning power of the company. The St. Regis mills have a present capacity of about 400 tons of paper a day. In arriving at a valuation in paper plants, it is customary to figure such properties at $30,000 a ton productive capacity. On such basis the St. Regis plants are worth approximately $12,000,000, although they are carried by the company at a depreciated value of $5,000,000. The St. Regis company has no funded debt. There stands ahead of the common stock $2,000,000 of preferred stock.

The Carlisle power interests have purchased the controlling interest of the Malone Light and Power Company of Malone, the Fort Covington Light, Heat and Power Company and the Millina and Lighting Company of Brasher Falls. The purchase was made by the Power Corporation of New York. It is expected that the new purchase will lead to the development of a 200,000 horse power plant at South Colton on the Racquette river. This purchase in the most northerly part of the state is an invasion of the territory served by the St. Lawrence County Utilities, Inc., controlled by the Aluminum

For Economical Production—Claflinize

The Auxiliary Plug
and
"Quick Change" Filler

This is one of the Latest Improvements on Claflin Refiners and is a Time and Labor Saver.

Costs less than old style solid plug.

Prices quoted on request.

Can be used either on Ball Bearing or Babbitted Type Machine.

Quickly changed by any one mechanic.

One piece filling, easy to handle.

Furnished either Special Alloy Steel, Cast Bronze, Manganese Steel or Lava Stone.

Direct from Digesters to Paper Machines—the Claflin Way

PROFIT depends upon production cost and production cost is proportionate to the number of operations necessary to produce a given quantity. The Claflin Way takes the pulp from the digesters direct to the paper machines, eliminating any need of tub-beaters or Jordans. This means less power consumed, less investment in machines, less labor, less time, and low minimum of repairs. Claflins are easier to operate, wear longer and work better. If, however, they are used with tub-beaters, they shorten the time from 25% to 50%. For bigger, better and infinitely more profitable production—Claflinize.

CLAFLIN Refiner

Number 2

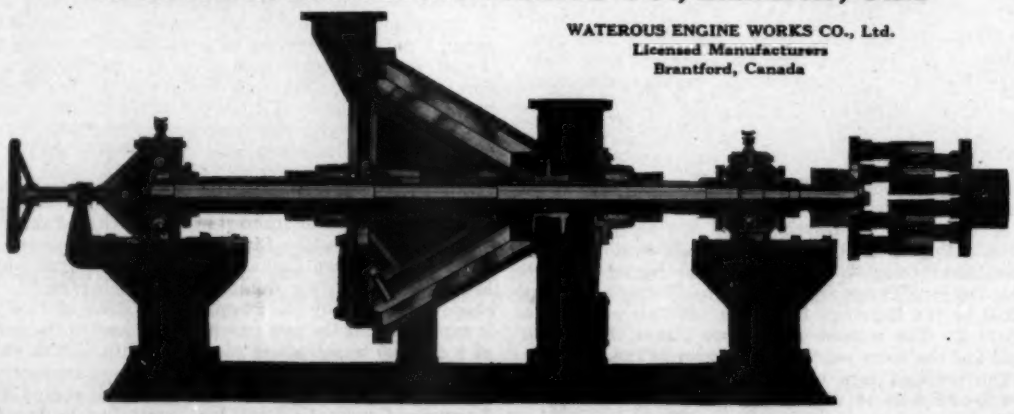
Floor Space—5′ x 14′
H. P. Reqd.—75 to 150
Speed—400 R. P. M.
Capacity—35 to 45 Tons per 24 hrs.
Pulley Reqd.—36″ dia. 20″ face
Inlet —8 inches
Outlet—8 inches

Write for catalogue

Built in three sizes

HERMANN MANUFACTURING CO., Lancaster, Ohio

WATEROUS ENGINE WORKS CO., Ltd.
Licensed Manufacturers
Brantford, Canada



Company of America, and will have a tendency to stop the expansion of the St. Lawrence Utilities to the east.

To Develop Glen Park Power

The International Paper Co., owning three mills on the Black river below Watertown, plans extensive development of the water power which it owns on that river. A representative of the main office of the International Paper Co. was in Watertown last month looking over the property. He said that plans for changing the mill sites into hydro-electric stations was under consideration.

He said that it was not likely that the Glen Park mills would again be used for the manufacture of paper. He said that the middle mill at Glen Park had been practically dismantled. There is one machine standing in the mill at present. The two other mills are equipped and could be used in case of emergency. It is probable that the local mills would be used if the company received several large orders and it became necessary for the company to get them out at once. The mill would have to be operated at a loss, however, it was pointed out. The cause for the local mills being shut down was that the production at the Glen Park mills was less than that of any other mill and that would make the cost of wages and production higher. For this reason it would be necessary to keep the mill running at a loss if operations were continued.

The representative of the company said that although the company is curtailing expenses at the present time, practically all the other mills of the company are running all machines. The Hudson Falls mills is doing a capacity business as is the Glens Falls mill. There are also two Canadian mills which are running full force.

The company representative said that he believed the paper industry in northern New York was on the decline and that in the next few years a greater number of newsprint mills will be operating in Canada, with the American mills devoted to specialty work.

It has been definitely decided that Jeremiah T. Carey, for many years president of the International Brotherhood of Paper Makers, would head a ticket in opposition to the one headed by President Matthew H. Parker. Archie Hickman, a former vice-president of the brotherhood will have a place on the Carey ticket. The Parker regime came into power about a year and a half ago, and it was contended at the time by the Carey forces that the election was fraudulent. Mr. Carey carried the matter to the courts and was defeated. The election is to be held between October 1 and October 15.

Paper Products Company Loses

A decision in favor of the Strong Box Company of America and against the National Paper Products Company having a mill and factory at Carthage, has just been handed down by Justice Ernest I. Edgecomb of the Fifth district of the Supreme Court of New York state.

The action was brought to enforce a contract made October 18, 1917, wherein a folding and a slotting machine were leased to the defendant for use in its plants in the manufacture of boxes. It was specified that the defendant should pay $6,000 for their use, the machines being patented and the plaintiff holding the patents.

The machines were shipped from Baltimore where the defendant had seen them in operation and $3,000 was paid down. The shipment was made Nov. 27, 1918. Later the defendant refused to accept them on the ground that they were second-hand, defective and not as represented. They were shipped back and a demand made for the $3,000 paid down and for $650.91. Justice Edgecomb held that the machines were not second-hand, although they had been used for demonstration purposes, and also held that they were not defective nor misrepresented.

In commenting on the statement of President Graustein, of the International Paper Co., that no reduction in the price of newsprint below $70 a ton was expected, Watertown manufacturers agree with him. They say no reduction will be made this year as the present contracts run through the present year. It is expected that new prices will be discussed late in the year and there may be a small reduction.

John J. Warren Seriously Hurt

John J. Warren, president of the Harmon Paper Company, of Brownville, president of the Warren Parchment Company, of Dexter, and consulting expert of the St. Regis Paper Company, was seriously burned by an explosion at his summer home, July 31. Mr. Warren was at his summer home at Three Mile Bay and was soldering a pipe from the gasoline tank of his motor boat when the accumulated gasoline fumes exploded. He was badly cut and burned about the head by flying metal. He was removed to the House of the Good Samaritan at Watertown. While his condition was at first considered critical, it is not believed that his injuries will result fatally.

Mr. Warren recently returned from Europe where he spent two months in Germany, Norway and Sweden on business connected with the marketing of the Warren magazine pulpwood grinder, of which he is the inventor.

Expect Twenty Colleges at Chemical Exposition

About twenty leading American colleges and universities have filed applications for their students of chemistry and chemical engineering to take the one week course of intensive training in practical technique of chemical engineering to be held in conjunction with the Tenth Exposition of Chemical Industries at the Grand Central Palace, New York, during the week of Sept. 28th to October 3rd. More than three hundred students are expected to enroll before the closing date.

All students of recognized colleges, as well as practicing chemical engineers, who desire to brush up on fundamentals, are eligible to take the course which is without cost.

Pulp Wood Offer from Europe

Information comes to THE PAPER INDUSTRY that pulpwood is being offered for shipment to United States ports from eastern Europe, more particularly from Archangel in Russia in the quality and sizes desired by pulp mills here. The logs are shipped sound, squarely butted, free of outer and inner bark and smoothly stripped of knots in sizes 4 ft. long and 5 inches in diameter, with perhaps a small proportion of 4-inch logs, at prices approximating $22 to $23 a cord, cif. U. S. A. Atlantic ports for full cargo shipments, if it can be arranged to send the same vessel to two or three ports.

As shipments would be made from Archangel, a port that is closed during the winter months, nothing could leave there after October 1.

A cargo consists of about 1,500 cords (4x4x8 ft.). Archangel wood is a variety of pine, known for its quality and is sold successfully in the United Kingdom, but how suitable it is for pulping by the sulphite process, we are unable to say.

Cutler-Hammer Acquires Payne Dean, Ltd.

The Cutler-Hammer Mfg. Co. has purchased the business and patents of Payne Dean Limited.

The Dean Valve control apparatus has always been manufactured by The Cutler-Hammer Mfg. Co., and they have recently also manufactured much of the other equipment sold by Payne Dean Limited, such as the auxiliary power plant apparatus, including Dean Signal Systems, switchboards, load indicators, etc.

The Cutler-Hammer Mfg. Co. will continue the development and manufacture of these devices, and will also market them.

Mr. Dean and many of his associates are now connected with The Cutler-Hammer Mfg. Co., and will actively assist in the promotion of this work.

Future communications should be addressed to The Cutler-Hammer Mfg. Co., Boston, New York, Philadelphia, Buffalo, Pittsburgh, Cincinnati, Cleveland, St. Louis, Chicago, Detroit, or Milwaukee, as may be most convenient. Inquiries from the Pacific Coast may be directed to The H. B. Squires Co., Los Angeles, San Francisco, Portland or Seattle.

By the acquisition of this business The Cutler-Hammer Mfg. Co. hopes to serve the industry even more effectively than has been done in the past.

For flat box service

View showing a Jennings Flat Box Pump in a well-known paper mill

With the new Jennings Flat Box Pump, air is removed from the flat boxes independently of the water, and is discharged directly to the atmosphere without back pressure. The water, after it is withdrawn by the pump, is returned to the machine well or forced under pressure to the stock chest or beaters.

Handling the air and water separately accounts for a big saving in power. Floor space occupied is a minimum.

Be sure to write for the bulletin describing this new Hytor. It will solve your flat box pump problem.

NASH ENGINEERING COMPANY

So. Norwalk **Connecticut**

New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Sq., Boston, Mass.

Western Representative
Mr. T. H. Savery, Jr., Room 1524 Republic Bldg., Chicago, Ill.

Jennings Hytor

THE WATERBURY FELT CO.

SKANEATELES FALLS

New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

RESILIENT RUBBER ROLLS

That are snappy but not soft
Are the kind to use for paper machines

Made By

STOWE & WOODWARD COMPANY

The Rubber Roll Makers NEWTON UPPER FALLS, MASS.

Michigan News

Kalbfleisch Firm to Expand

The Kalbfleisch Corporation, manufacturers of rosin size, satin white, and a very extended line of chemicals for industrial purposes, announce plans for the immediate enlargement of the Kalamazoo plant and its expansion until it becomes one of the really important units in this concern's widely extended operations.

The corporation's engineer in New York is now working on the details of the improvements proposed in Kalamazoo and their exact nature will be known in a short time. It is understood that the new buildings contemplated will include an adequate power plant, also a large addition to the present factory. Other buildings are to follow within another eighteen months.

The Kalbfleisch Corporation purchased the property of the Michigan Silo Company, at the intersection of Race street and the Grand Trunk's siding. In addition to the buildings, there are eight acres of land. The deal completing the transfer of the site has been finished, and enough of the land has been cleared and leveled to make it possible to erect the buildings for the enlargement of the facilities locally.

This concern celebrates in 1926 the 100th anniversary of its founding. It is recognized as one of the strongest industrial chemical manufacturing concerns in the world.

D. Graff Addition Ready for Occupancy

The large addition to the warehouse owned by D. Graff and Sons, paper stock dealers in Kalamazoo, is nearly completed and will be ready for occupancy this month. It is connected with the original building by open archways and sliding fireproof doors. The four stories will add about 10,000 square feet of floor space to the area of this one unit.

Sam Graff, vice-president, reported that the additional space is badly needed. Despite the immense capacity of the two warehouses operated, the business of this concern is showing a remarkable growth. Paper stock of all grades are shipped to Kalamazoo from points in Michigan and Indiana and sorted and graded here. Virtually the entire output of this concern is sold to mills in the Kalamazoo valley.

Fatal Accident at the Rex Paper Co.

Clyde Parkhurst, age nineteen, died on July 19th, from injuries he had sustained on the previous day in an accident at the Rex Paper Company, Kalamazoo. The young man was hurt internally while attempting to mount a heavy drive belt on a pulley.

Parkhurst used a long stick with which he tried to slip the belt into place while the pulley was revolving at a rapid rate. The belt mounted the pulley and snapped the stick from the young man's hands, driving the end several inches into the pit of his stomach.

Parkhurst resided with his parents in Comstock. He was a former Normal high football star.

Allied Cost Accountant Dies

Fred G. Horsfall, a well known paper man in the Kalamazoo valley, died on July 20th at the age of sixty-one. Mr. Horsfall had been shipping clerk at the Monarch Paper Co. for fifteen years, when on the formation of the Allied Paper Mills, he became a cost accountant with that company. He is survived by his wife and two sons, Olin L., of Chicago, and Cecil H., of Jackson, Michigan.

Fred C. Clark, who became one of the organizers of the Hawthorne Paper Co., Kalamazoo, Mich., a little more than a year ago, has recently been made secretary of that company, succeeding Robert L. Pease, who resigned. Mr. Clark was formerly vice-president and general manager of the Pejepscot Paper Co., Brunswick, Me., and is well known in the industry.

The Joint Committee on Approved Chemists of the American Paper and Pulp Association has recently approved for listing Mr. B. K. Steadman, of Standard Paper Manufacturing Co., Richmond, Va.

Pacific Coast News

August 1, 1925.

Will Study Seattle's Possibilities

The feasibility of establishing pulp and paper industries in or around Seattle will be studied by a subcommittee of the Industrial committee, Seattle chamber of Commerce, it was announced, following an organization meeting of the subcommittee. R. F. Weeks, chairman of the industrial committee, appointed the subcommittee, the members of which are Dean Hugo Winkenwerder of the college of forestry at the University of Washington, chairman; Prof. B. R. Grondal of the same school, C. O. Myers, Fred W. Graham, Fred J. Perrine, Guy C. Howard, F. J. Zorn, O. H. Kneen, R. C. Erskine, W. T. Batcheller, Col. H. G. Winsor, and W. G. Weigle of the United States Forestry service.

The subcommittee will study sources of raw materials, transportation costs, markets and industrial conditions and prepare a report that will give the industrial committee data that will be available for the information of pulp and paper manufacturers seeking location in Seattle. The committee has received a number of inquiries in the past year for pulp and paper mill opportunities.

Two more large reinforced concrete buildings as well as a considerable earth and rock fill to give increased water frontage are to be added to the plant of the Powell River Paper Mills, on Powell river, B. C. Contract for this work, which is part of a program of extension and costly enlargement of the company which will run to an expenditure of approximately $1,000,000, has been awarded to the Armstrong Morrison Company, Ltd., of Vancouver, B. C. Two buildings and other improvements to be put in by this company will aggregate $400,000.

Rumor has it that certain Chicago financial interests, comprising among others, Cyrus and Harold McCormick, principals in the International Harvester Co., have had a survey taken of the timber holdings of the Beaver Cove Lumber and Pulp Company, on Vancouver Island, B. C., with the purpose in view of spending about $10,000,000 in the erection of a modern paper mill on the property and the harnessing of a big water fall on the Nimpkish River that will provide sufficient power for the entire plant.

A. D. Bowen, president of the Lewis Pulp and Paper Company, recently announced in Kalama, Wash., that his company has acquired a location from the port of Kalama in what is known as South Kalama on the tract known as a part of the Ahler Donation land claim. A mill will be built which will employ about 100 men.

Stockholders of the St. Helens Pulp and Paper Company, St. Helens, Ore., are discussing a proposed mill to be erected at St. Helens. No engineer has yet been appointed to prepare plans. The plant will cost more than $1,000,000.

Chemistry's Silk to Be Exhibited

What will perhaps be the most extensive exhibition of rayon, commonly called artificial silk, and more properly designated chemical silk, ever shown in America, will be displayed at the Chemical Exposition which is to be held September 28th to October 3rd at the Grand Central Palace, New York.

The artificial silk industry, through its various manufacturers, is going to prepare a joint exhibit of all phases of rayon manufacture, as well as weaving, finishing and dyeing. Four or five large booths in the Exposition will be given over to the educational side of the most widely used fibre ever developed by chemistry. The exhibit will be designed from the technical side for the practical textile man and from the educational side for the layman.

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LIME MUD DEWATERING

Compiled by a Paper Manufacturing Company

ITEM	COST PER TON DRY MUD	
	FILTER PRESS	OLIVER
Labor	0.222	0.09
Power (@ $50 H.P. year)	0.13	0.129
Covers	0.333	0.056
Repairs, renewals (other than cloth covers)	0.015	0.022
Oil, grease, acid, etc	0.001	0.005
Total operating cost per ton mud	0.701c	0.302c
Basis 25,500 tons pulp per year		
Operating costs per ton pulp	0.374c	0.16
Saving per ton by Oliver		0.214
Saving per year by Oliver		$5457.00

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London
11 Southampton Row

Johannesburg, South Africa
E. L. Bateman, The Corner House

Canadian Section

Montreal, August 1, 1925.

Explanation for Belgo Price Cut

The recent action of President Biermans, of Belgo-Canadian Paper, in announcing that his company's price for newsprint starting with January, 1926, would be $65 a ton, occasioned considerable surprise at that time, and since then there has been considerable conjecture as to his reason for making such an announcement so far ahead of time. The other newsprint manufacturers have made it clear that they are not prepared to make any statement as to their price for next year, pointing out that many things can transpire in the industry before that date.

The Montreal Gazette puts forward the following theory in explanation of Mr. Biermans' action:

"To arrive at a reason for Mr. Bierman's action, it might be interesting to remember that in a published statement some months ago, he outlined a plan for the restriction on the exports of pulp wood from this province based on the grounds that preservation was absolutely essential to the industry and to the province.

"Mr. Biermans was accused of a desire to cause an increase in the price of newsprint to the publishers in the United States, in the publication of the American Newspaper Publishers' Association, and the belief is that to show his sincerity in the matter of preservation, rather than to cause any advance in the price of newsprint, that Mr. Biermans made the announcement that he would contract with his customers for 1926 at the rate of $65 a ton. He is further understood to have suggested that he would be willing to make an agreement for 5 years based on a maximum price to be set.

"Thus from the above, it might be deduced that the action of Mr. Biermans was the result of other than the actual situation in the newsprint industry. While the constant expansion of the production of newsprint in this country has been the cause of much nervousness, it must not be lost sight of that there is reported by the American Newspaper Publishers' Association a constantly growing consumption of newsprint by the papers of the United States."

Safety Contest Between the Soo and Grand' Mère

A friendly safety contest has been arranged between the Soo mill of Spanish River and the Grand' Mère mill of Laurentide Company. J. H. Turner, safety engineer of Laurentide, and R. M. Olzendam, secretary of the department of industrial relations of Spanish River, got together and have arranged a contest which runs from July 1st to September 30th, inclusively.

Whichever mill has the best record during this period will be acclaimed "cock of the walk" until such time as the record established is bettered by some other mill. Rules governing the competition have been drawn up and mutually agreed to, and a judge has been appointed in the person of A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association. It is quite a tribute to Mr. Costigane's ability and fairmindedness that his name was submitted by both sides to referee the contest.

Privy Council Upholds Brokers' Claim Against Ticonderoga Co.

Word has been received from London that the appeal of the Ticonderoga Pulp and Paper Co. has been dismissed by the Privy Council, in the litigation arising out of certain purchases of Riordon stock made by McDougall and Cowans, members of the Montreal Stock Exchange, for the Ticonderoga Co.

The amount claimed by McDougall and Cowans was $234,765.88, based on four notes, all dated April 22, 1921, and due two, three, four and five months after date, given by Ticonderoga for the purchase of Riordon stock for that company, which had been authorized by two officers of the company. Such purchases had been made over a considerable period previous to above obligation and had in each and every case been ratified by the directors of the Ticonderoga, which, while not a subsidiary of Riordon, had almost the same directorate.

When the Riordon difficulties arose in 1921, the above notes were repudiated by those who were in the direction of the Ticonderoga company, who claimed that the purchase of stock for which the notes had been given was improper, illegal, and beyond the powers and legal capacity of the company, adding that the purchases were neither authorized nor ratified by the company, nor its directors, but were made without their knowledge or consent.

The action of McDougall and Cowans to recover the indebtedness was dismissed by Mr. Justice Duclos of the Superior Court, Montreal, but upon appeal being taken by the brokerage firm to the Montreal Court of Appeals, the judgment was reversed and the action maintained for the amount sued for. The cable advice from England states that the appeal of the Ticonderoga company was dismissed without counsel for the respondent having been called upon.

QUEBEC

Good Progress on Canada Paper's New Mill

Canada Paper Co., Windsor Mills, Quebec, is installing new equipment, so as to resume the manufacture of pulp for high grade book and writing papers. The new mill is built for four digesters 9½x35 ft., but will start up with two, which are already installed. These digesters are a step in advance of anything yet used, being of welded steel to be operated under a pressure of 160 lbs. per square inch. Steam to the digesters will be supplied by the Morterud system from B. & W. water tube boilers operating at 200 lb. pressure.

The pulp will be cooked by the Keebra process, this mill being the first installation of its kind in Canada. This process not only gives a good yield, but produces remarkably fine, silky pulp. The pulp will be washed on Oliver filters, and the black liquor will be concentrated in a Yaryan evaporator and disc furnaces.

The mill was designed by Geo. F. Hardy, New York, and P. Delin of Chicago is consulting engineer on the ground. It is expected that pulp will be produced some time about September 1st.

The first bulletin of the season on the activities of the forest protection services of the Province of Quebec was recently issued by Henri Kieffer, chief of the service. The bulletin states that from the start of the season, 232 small forest fires have been signalled, nearly all of them in their first stages, and therefore easily controlled. They caused practically no damage to the timberlands of the Province.

The sulphite, groundwood and newsprint mills of the E. B. Eddy Co., Ltd., at Hull, Que., were closed down for a few days towards the end of last month. Contracts sufficient to keep the mill busy for the rest of the year have been received; but owing to the fact that the various papers did not wish to receive their shipments until the dates on which they would be needed, it was considered advisable to close the mills temporarily.

Attracted by the possibilities offered by the lumber and pulp and paper industries in the Province of Quebec, the number of applications for admission to the School of Forestry at Berthierville has doubled over last year. There are 100 applicants, while accommodation is adequate only for 50 pupils; and it is intended to make the applicants pass an elementary test. At the School of Pulp and Paper Making,

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at Three-Rivers, the same movement is noticeable, and large pulp and paper concerns are arranging for a number of their employees to follow those practical courses.

Some time ago, Price Bros. & Co. entered an action to have its properties on Lac Métis delimited. The Province of Quebec claimed that the company only had rights on 48,000 acres, against which the company replied that they were entitled to 101,000. In both the Superior Court and the Court of Appeals, the contention of Price Bros. was upheld unanimously; but the Supreme Court of Canada gave judgment in favor of the Province. Appeal was entered to the Privy Council, and word has just been received that permission to appeal has been granted. It is probable that argument will take place in London during the coming fall. Price Bros. have also been granted leave to appeal to the Privy Council in the case of Price Bros. vs. La Corporation d'Energie de Montinaguy, which Price Bros. had won in the Superior Court and lost in appeal.

Geo. McKee Heads Port Alfred Company

George M. McKee, president and general manager of the Algonquin Paper Co., of Ogdensburg, N. Y., has accepted the presidency of the Port Alfred Pulp and Paper Corp., Port Alfred, Quebec. His appointment was ratified at the annual meeting of the corporation held in Montreal last month. Mr. McKee has been associated with the Canadian pulp and paper industry since 1912, his connection commencing with his organization of Donnacona Paper Co., of which he remained managing director until 1922. During his régime, Donnacona mill was constructed and its valuable timber rights on the Jacques Cartier river were acquired. Under his guidance the mill became noted for its low cost of production.

Mr. McKee was recognized by the Canadian Pulp and Paper Association, by his election as vice-president in 1921 and as president in 1922. His term in the latter office, however, was cut short by his departure for Ogdensburg for the organization of the Algonquin Paper Co.

It is understood that Mr. McKee will actively direct the operations of the Port Alfred mill.

Director of School of Paper Making Resigns

P. E. Piché, director of the School of Pulp and Paper Making, at Three Rivers, Que., which was opened two years ago by the provincial government, has tendered his resignation. No reason for the resignation was given.

Mr. Piché was appointed director of the school two years ago, when it was opened, and his resignation came as a surprise. No successor will be named until Hon. Honoré Mercier, minister of lands and forests, returns from abroad.

Port Alfred and Belgo Secure Valuable Peribonka Limits

The Port Alfred Pulp and Paper Corp. and the Belgo Paper Co. were the successful bidders for the Peribonka and Normandin River limits, which were auctioned off at Quebec on the 29th of last month. The total area of the limits is approximately 2,000 square miles.

The Port Alfred Corporation were the sole people to fulfill conditions as laid down by the Government, depositing a certain amount as evidence of good faith, and Mr. R. O. Swezey, acting for the company, bid ten cents over the upset price for stumpage dues, this bid being accepted, and the land knocked down to him. In the case of the Normandin River limits, the Belgo company was the only tenderer, and they bid ten cents over the upset price, for stumpage dues.

In all, the upset price brings a little over $1,000,000 to the government, while the annual revenue is expected to be in the neighborhood of $100,000.

After the sale the Port Alfred people announced that a pulp mill would be erected in the vicinity of the Peribonka limits, while the Port Alfred pulp mill will be completed by addition of a paper mill. Power will probably be obtained from the Duke-Price development at Grande Décharge.

One of the features of the conditions is the clause that "Following the instructions which may be given by the minister to the licensee, the lumbering operations may be forbidden in whole or in part on a zone of three chains in width, which is reserved by the Crown, on each side of the water courses as well as around the lakes." Also, the lessees of the limits will not be permitted to cut more than 80 per cent of the annual growth on their holdings.

One of the most important contracts given in Quebec Province in years has been awarded by the Belgo Co. to Alonzo Tremblay and N. Boucher, contractors, of Chicoutimi, and provides for the cutting of 3,000,000 logs.

Ontario Paper to Develop Quebec Power Site

Work is being started at Manicouagan, on the North Shore of the St. Lawrence, by the Ontario Paper Co., on a huge water power development, which is preliminary to the construction of a paper mill to be operated by the company.

In November, 1923, Ontario Paper leased from the Quebec Government a large area of timber limits located along the Manicouagan River, and also at the same time obtained the right to develop the water powers of the Manicouagan River to allow its operations to be conducted. A few weeks ago the final arrangements were completed, and the work is being started.

In fact, a new manager of Ontario Paper was appointed at Shelter Bay, in the person of G. H. Boisvert, and Mr. Schroom, the former manager, was transferred to the new scene of activities at Manicouagan.

Quebec Aviation Service to Be Reorganized

A thorough organization of the aviation branch of the Provincial Lands and Forests Department of Quebec is predicted on the return to Canada of Hon. Honoré Mercier, when it is reported that the province will purchase several more hydroplanes to be used for forestry research work, as well as for combating forest blazes and other work. It is reported that the reorganization will be effected by a noted airman, a stranger to Quebec, whose name is not yet available, but who will be placed at the head of the aviation service.

In the past the federal and provincial governments have jointly defrayed the expenses of this branch of the department, but under the new project the Province of Quebec will take charge of everything and thus make itself independent of the federal government.

Captain Quigley has up to the present been in charge of all aerial survey work. Hydroplanes have been extensively used for the surveying of the timber wealth of the province, some 25,000 square miles being surveyed last year. The airmen also played an important rôle in respect to forest fires, not a little of the credit for the reduced losses of the province last year going to them through their ability to inform the fire rangers of the presence of fires.

Memorial to Sir William Price

All Chicoutimi district turned out on the last Sunday in June to honor the memory of the late Sir William Price, president of Price Brothers & Co., who lost his life in the big landslide at Kenogami last October, and many speeches recalling the prominent part he had played in the development of the country were delivered at the unveiling of a memorial plaque.

Sir Charles Fitzpatrick, former lieutenant-governor of the province; Hon. L. G. Belley, Dr. Parent, M. P., the mayor of Chicoutimi, and Hon. J. Moraud, minister without portfolio in the provincial government, were the speakers of the afternoon.

It is understood that a monument will be erected without delay on the spot where Sir William's remains are buried.

Saguenay and Chicoutimi Reorganization Plan Approved

Announcement has been made that the collateral trust bondholders of the Saguenay Pulp & Paper Co. have finally agreed to the reorganization plan which had previously been approved by the majority shareholders. This means that the way is now clear for putting into effect the plan as drawn

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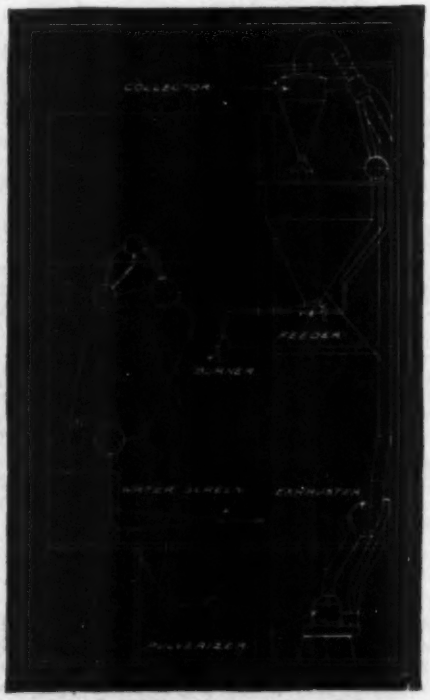

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up by the bondholders' protective committee. There remain only a few details to be settled as to the necessary legal arrangements. After everything has been completed the trustee will within two or three weeks time remit cheques covering interest coupons which were due July 1.

It is understood that the representatives of the Scotch banking interests in the Saguenay company were at first opposed to the adoption of the plan. After the exchange of several cables with headquarters in England, the matter was finally settled.

The plan provides, among other things, for the incorporation of a new company under the name of Quebec Pulp & Paper Mills, with authorized capital of $22,000,000, which will acquire by purchase, exchange of securities, or otherwise, ownership of the assets of the Chicoutimi Pulp Co. and of the Saguenay Pulp & Paper Co. and of their subsidiaries. The combined assets of the new company are estimated at $17,707,634.

A. S. McNichols, president of the bondholders' protective committee, stated recently that the mills of the company at Chicoutimi are working to full capacity. The company has at present orders on the books sufficient to keep the mills running full time until November next. The pulp is being produced for export, partly to England and partly to the United States. It is expected that operations can be carried on for a considerable time with the working capital on hand, without the need of new financing at the present time.

Another Artificial Silk Plant Projected

The Dominion Textile Co., Ltd., Montreal, have in view certain important development which, if carried out, will greatly enlarge the scope of that organization. One of these is the entry of the company into the artificial silk industry on a large scale. If this is done a special plant for the production of silk will be constructed somewhere in eastern Canada.

One of the important industrial applications of the entry of the company into this field would be the necessity of purchasing a large quantity of wood pulp from which the silk is made. One theory is that the logical source of supply of the pulp would be from the Kipawa mill of the Riordon company, now controlled by the Quebec International Paper Co. As the requirements of the silk plant would be considerable, their purchases in the pulp market would provide a large and very welcome outlet for the surplus pulp which has for quite a while been a factor in the market and which made the rehabilitation of the defunct Riordon company such an impossible undertaking.

Kenogami Dam Nearing Completion

According to reports available at the Running Streams Commission at Quebec, 12,000,000 cubic feet of water are now stored at Lake Kenogami, where damming work has been in progress for the last two years. Engineers are endeavoring to have it completed early in September. Some delay occurred a few months ago when a leak was discovered on one side of the dam, but additional help resulted in quicker progress. The dam when completed will have cost nearly $2,000,000.

The depth of the dam is 35 feet, and the object of its construction is to regulate the flow of the waters so as to permit an all-year-round operation of the mills of Price Bros. at Kenogami and of the Chicoutimi pulp mill on the Des Sables river. The building of the water storage plant at Lake Kenogami necessitated the expropriation of the village of St. Cyriac, the residents of which were given lands in other sections of Chicoutimi county.

Another Big Hydro-Electric Development

With a capital of $22,000,000 and head office in Quebec, incorporation has been sought by the Duke-Davies interests of New York and Philadelphia of a company to start hydro-electric development at Chute á Caron in the Lake St. John district. The capital of the new company is one of the largest in this province. It is understood that the corporation intends to expend $75,000,000 on the power development and on an aluminum plant which will absorb a considerable portion of the power. The plan is to erect a 600,000-horsepower hydro-electric power plant, and clearing has already been started over the large area.

Price Bros. & Co. have disposed of their rights in the Chute á Caron power site on the Saguenay River, a short distance from which it flows out of Lake St. John. The amount which Price Bros. is to receive for the site, one of the most important from the standpoint of hydro-electric development possibilities in Canada, is reported to be between $5,000,000 and $6,000,000.

Six falls and rapids between Kirk's ferry and Chelsea, Quebec, will be wiped out and more than 144 acres above high water will be flooded by the dam which International Paper is to construct at Chelsea in connection with its projected 200-ton newsprint mill.

Wayagamack Machinery Coming Steadily

Another consignment of machinery for the Wayagamack News mill at Three Rivers recently arrived from England.

Several hundred tons of machinery were carried by the SS. Manchester Producer of the Furness, Withy Line. Owing to its weight the material could not be unloaded at Three-Rivers, but was taken off at Quebec and forwarded thence to Three-Rivers.

Médéric Lessard, 24 years of age, son of Alfred Lessard, was accidentally drowned at Lake Manouan. Lessard, who was employed by the Laurentide company at their Manouan camp, was crossing the lake in a motor boat when the engine exploded. The boat was set on fire and also Lessard's clothes. He jumped into the water, but was unable to make shore.

Among recent incorporations at Quebec is that of the Eastern Paper & Felt Mills, St. Basile, Portneuf county, with an authorized capital of $99,000.

ONTARIO

Abitibi Adding Many New Improvements

During 1924 there were 28,994 cars handled in and out of the yards of the newsprint mill of Abitibi Power & Paper Co., Ltd., Iroquois Falls, Ontario. This was equivalent to practically 80 cars a day for a 365-day year. Clearing right-of-ways for the new spur location of the Abitibi Transportation & Navigation Co. was started early last month. Approximately eleven miles of spur lines will be constructed this year.

Three new Bird screens have been installed on No. 1 paper machine and an extra Voith screen on No. 2 machine at the Abitibi mill. No. 5 motor generator has now been completely installed in the finishing room at the end of the machine and is in good order. Considerable work has been done recently in changing pipe lines, etc., in readiness for the installation of a new stock-mixing system.

Work has been done on a new hospital which is to be erected at Iroquois Falls, the town owned by the Abitibi company. It has also been decided by the company to build a three-sheet curling rink which will be located opposite the present skating rink.

Sale of Mattagami Company Authorized

The National Trust Co., trustee for the holders of the 6 per cent, twenty-one-year first mortgage bonds of the Mattagami Pulp & Paper Co., Ltd., with mill at Smooth Rock Falls, Ont., have sent out an official notice to the effect that it does not seem necessary that a meeting of the first mortgage bondholders should be called to consider any plan for the reorganization of the company, as the assets of the organization are sufficient for the bondholders.

The circular concludes: "We are informed that a meeting of the debenture stockholders of the company, whose claims are subordinate to the claims of the first mortgage bondholders, is being called forthwith for the purpose of authorizing Montreal Trust Co., the trustee for the debenture stockholders, to purchase at a judicial sale the properties of the Mattagami company on terms which will provide for payment in full and in cash of the first mortgage bondholders' claims, both prin-

Where Tax Payers Really "Shell Out"

In darkest Africa, where white men go only when accompanied by elephant guns and motion picture cameras, the natives still pay their income taxes with cowry shells.

For small change purposes the shells are strung 40 to 100 on a string. Since it requires about 25 of the longer strings to represent one good American dollar in purchasing value, it can be readily seen that the minting of shell money is no lazy man's task. A half-day's honest effort with native tools may enable an industrious workman to prepare 20 or 30c worth of cowry money for circulation.

A native chief, like any other ruler, has his expenses, and one within the present century is reputed to have collected 30,000,000 shells each year from his subjects.

Shells may very well do for those parts of Africa where the hand of civilization has only lightly touched. But in enlightened America we buy and sell, collect and pay, through the medium of little slips of paper, light, convenient, and more negotiable than the choicest cowry shells.

HAMMERMILL PAPER COMPANY

Erie, Pennsylvania

cipal and interest. We think the first mortgage bondholders will be interested to know that information has reached us which we think justifies the belief that the properties of the Mattagami company are worth more than sufficient to pay in cash the first mortgage bondholders' total claim, both principal and interest. We have therefore instructed our solicitors to proceed at once to bring the properties of the company to sale."

It is expected that after the company have completed refinancing they will proceed to erect a large paper mill to use the sulphite pulp they are now producing.

The Nipigon Corporation, Ltd., manufacturer of groundwood pulp, Nipigon, Ont., are not running to capacity at the present time and have not been for about a year. So far as the future of the market is concerned, they find it difficult to diagnose. Ernest Rossiter, manager of the company, stated that there was a natural water shortage throughout the Middle Western States, which may create a normal demand for pulp a little later in the season; but if, on the other hand, any abnormal rains make their appearance, the market was liable to stay in its present state of inactivity.

Large Pulp Wood and Timber Limits Offered for Sale

One of the largest timber sales to be conducted by the Ontario Government for some time is now being offered by the Department of Lands and Forests. The total area comprises about 9,000 square miles, situated in the Thunder Bay district and in the Cochrane district. In the latter are included the watersheds of the Kapuskasing, Mattagami and Ground Hog rivers.

The terms and conditions sent out by the department asks prospective tenderers to set forth clearly the size and capacity of the mills they propose erecting, the daily outputs of pulp, newsprint, or book paper to be manufactured, and the total amount of money to be spent if the tenderer is successful.

The successful tenderer must enter into a $250,000 bond with the government to carry out his obligations as to mill construction and operation.

The Kenora Paper Mills, Ltd., Toronto, was recently granted a provincial charter to manufacture paper, cardboard and paper substitutes. The capital will be divided into 500,000 common shares without any nominal or par value, the capital to be at least equal to the sum of the aggregate par value of all issued shares having par values plus the aggregate amount of consideration received by the company for the issuance of shares without par value plus such amounts as from time to time by the by-law of the company may be transferred thereto. The provisional directors of the company are William S. Morlock, Sydney E. Webb, Bruce V. McCrimmon and John G. Middleton, all of Toronto, Ont.

It is reported that the strike of the papermakers which has been going on at the Fort William Paper Co., Fort William, Ont., for some weeks past, is nearing an end, and that the mill will shortly resume operations. D. G. Calvert, manager of the plant, stated recently that he was ready and willing to open up the mill as soon as the men were ready to come back.

John Ball, one of the most prominent papermakers in Canada, has been appointed resident manager of the Beaver Wood Fiber Co., at Thorold, Ont. The company are now putting in a 166-inch newsprint machine and may install another one at a later date. Mr. Ball was lately with the Bathurst company, and has been taking a rest and holiday prior to assuming his new duties.

Provincial Mills Ship to Antipodes

Provincial Paper Mills, Ltd., of Toronto, are extending their market and recently shipped from their Port Arthur mill ten carloads of book and writing paper to New Zealand and Australia. This is one of the results of the recent trade treaty concluded between Canada and the Commonwealth, and it is believed that the favorable terms obtained by Canada will result in a larger paper business between the two countries. This is the first foreign shipment that Provincial have made to the Antipodes, and it is expected that all their surplus stock from the Port Arthur mill will be sent overseas.

Improvements are being carried out at the plant at Georgetown, Ont. A new high speed engine and electric generator have been installed and a new roof is being placed on No. 1 machine room.

A provincial charter has been granted to the Long Spruce Timber Co., with head office in Tavistock, Ont., and an authorized capital stock of $40,000, to carry on the business of timber merchants, sawmillers, shingle mill and pulp mill owners, etc.

Officers of Local 109, International Brotherhood of Paper Makers, Iroquois Falls, were installed a short while ago, as follows: President, F. D. Hogue; vice-president, S. Martineau; financial secretary, A. E. Tregwin; corresponding secretary, Fred Mills; trustees, Fred Haines, H. Clowes and C. Mitchell.

The name of the Lincoln Mills, Ltd., of Merritton, Ont., has been changed to the Lincoln Pulp & Paper Co., Ltd.

E. W. Backus is making preparations for increasing the newsprint output of his mill at Fort Frances, Ont., by 150 tons daily. An agreement is being entered into with the town of Fort Frances and is now being considered by the citizens.

Well-Earned Promotion for H. L. Sanborn

Abitibi Electrical Development Co., Ltd., is a new company which was formed to take over the Island Falls power plant with transmission lines, etc., recently acquired by Abitibi Power & Paper Co. from Hollinger Consolidated Gold Mines. H. L. Sanborn, hydraulic and electrical engineer of the Abitibi Power & Paper Co., has been appointed manager of the company and has already taken office. The other officers are the same as for the paper company.

The appointment of Mr. Sanborn as manager of the new company, while a natural sequence to his work in connection with the Abitibi company, has caused a good deal of satisfaction in Iroquois Falls, because it is in line with the company's settled policy of carrying on the work of the company through the men who have been intimately associated with it in the past. Mr. Sanborn is the only superintendent of the company who occupied that position when the mill was started. He went to Iroquois Falls in 1913 as hydraulic and electrical superintendent and has been in charge of these two departments ever since.

At the recent convention of the Ontario Retail Grocers' Association, held in the King Edward Hotel, Toronto, a fine display was made by Kilgour Bros., manufacturers of paper bags, Toronto, and the Interlake Tissue Mills, Toronto, both of which attracted much attention.

The Ontario government sold 3,134 square miles of timber limits during the year 1924, of which Abitibi Power & Paper Co. purchased 2,466 square miles in the Cochrane district to supply their big mill at Iroquois Falls, Ont.

Preliminary operations are under way for the construction of the $500,000 storage and power dam on the Muskosh river, authorized by the Ontario legislature at its last session. The proposed work is designed to control the flow from the Muskoka Lakes basin and will enable the linking up of power development in that district with the Eugenia-Severn system.

The appeal of the Fort Frances Pulp & Paper Co., of Fort Frances, Ont., in an action brought by the town of Fort Frances for taxes, has been dismissed by the First Division Court, Toronto. The company counterclaimed for $34,350 for electrical power supplied the town. The local master allowed $16,174 and this amount stands.

The Provincial Paper Mills, Thunder Bay Co., Hammermill Paper Co. and Fort William Paper Co. have given Capt. Sam Wright the contract to pick their pulpwood in Lake Superior.

Morey Paper Mill Supply Company

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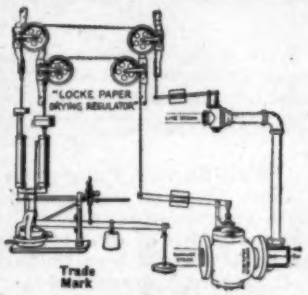

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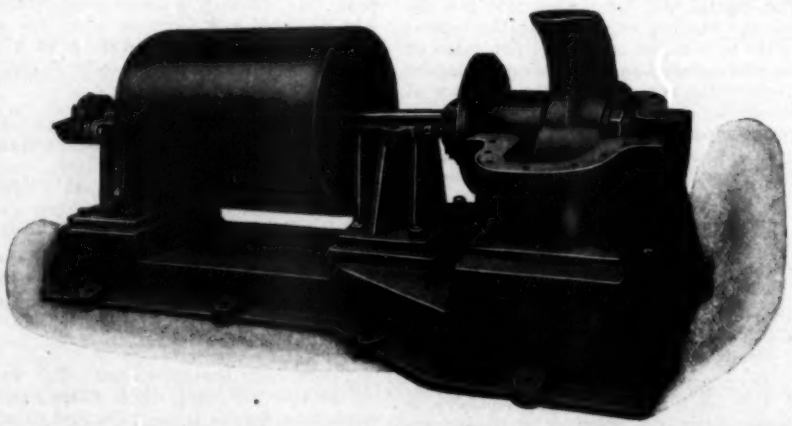

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NEW BRUNSWICK

Big Demand for Grand Falls Power

Pulp and paper mills already established in New Brunswick will have first call on power from Grand Falls development, except as provided for in the contract with International Paper Co. Further development will provide for demands from new industries in excess of the between 50,000 and 60,000 horsepower to be made available by the initial development.

The contract wtih International Paper calls for 14,000 horsepower. The second bloc of secondary power—10,000 horsepower for grinding pulp—which International Paper has contracted to use in New Brunswick, is conditional upon the amount being available. It is understood that the Bathurst company and the Fraser companies have first claim upon the secondary power to be available.

Public Offering of Fraser Bonds

Royal Securities Corporation and Wood, Gundy & Co. have announced public offering of $2,500,000 Fraser Companies, Ltd., 6 per cent first mortgage bonds, series "A." The bonds form part of an authorized issue of $10,000,000, of which $3,500,000 was issued in January last for the purpose of retiring the then outstanding first mortgage serial 6's and general mortgage 8's.

The present issue is for financing and providing working capital for the 200-ton book paper mill which the company are erecting at Madawaska, Me., just opposite their bleached sulphite mill at Edmundston, N. B., and which is expected to be in operation at the beginning of 1926.

A. D. Ganong, of the Home Paper Box Co., St. Stephen, N. B., was elected a vice-president at the annual meeting of the Maritime Provinces branch of the Canadian Manufacturers' Association at a recent meeting of that organization. At that meeting it was pointed out that it would be adding greatly to transportation expenses of eastern paper-box manufacturers to ship west to Montreal in order to market their boxes, cartons, etc., in the West Indies.

NOVA SCOTIA

The A. P. W. Pulp & Power Co., Sheet Harbor, N. S., have now been operating for about two or three months and are turning out 65 tons of dry groundwood per day, all of which is shipped by water from the mill dock. So far this season the company have made no attempt to make shipments except to the A. P. W. Paper Co., at Albany, N. Y. The firm states that the provincial government has had no difficulty in delivering 5,000 horsepower and that the supply of wood is ample to meet their needs for the coming year. While the company are experiencing a few minor difficulties, they state that in the near future they expect to have their tonnage up to maximum mill capacity.

A reorganization of the Bear River Pulp & Paper Co., Ltd., will likely mean the resumption of operations in the paper box, carton and corrugated paper manufacturing department of that concern. The pulp mill is located at Bear River, N. S. Since the reorganization, kraft pulp has been produced for the United States market, but the intention is to resume operations in full during this year. The company is now in the hands of a syndicate headed by Col. C. E. Phinney, of Halifax, who is in control as general manager.

Barnjum Reiterates Pre-election Promise

Frank J. D. Barnjum, victorious conservative candidate for Queen's county in the recent provincial elections in Nova Scotia and Canada's most prominent advocate of an embargo on pulp wood, reiterated his pre-election promise that he would build a pulp and paper mill in Nova Scotia early last month.

"I want to tell the people of Nova Scotia," he said, "that I am going to build a paper mill in Nova Scotia that will provide a market for every cord of wood that is now being exported by the farmers of this province."

The new mill will be situated on a site between the highway

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Positive Dryer and Temperature Control AND *Condensate Drainage*

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This is only one item in an order totaling nearly eight thousand dollars. For nineteen years they have been using Rhoads Belts.

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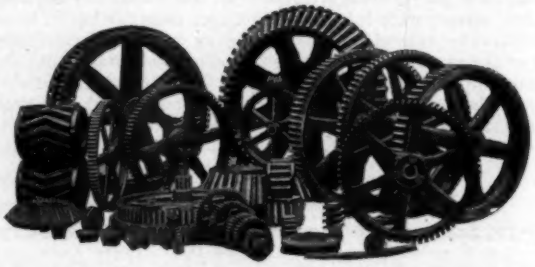

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bridge and the railway bridge over the River Mersey. The location is almost on the line between Liverpool and Milton. Mr. Barnjum is now negotiating for the purchase of the land required, and the deal is reported to be about completed.

BRITISH COLUMBIA

The committee appointed by the bondholders of the Whalen Pulp & Paper Co. has issued a plan for financing, based on an offer made by the Royal Securities Corporation and now recommended by the committee of bond and debenture holders, which will place the company on an excellent financial footing, and the control will still remain in Canada. It is expected that the deposition bondholders will sanction the scheme. The Whalen company, whose general office is at Vancouver, B. C., is in a fair condition at present, and if the new deal is concluded the industry will be on a sound footing once more.

The National Paper Box & Carton Co., Vancouver, B. C., which has been established twelve years, is very busy at the present time and turns out all kinds of boxes. Among recent orders was a large one for chocolate boxes costing $10 each. This high-priced container is a work of art, the lid containing a picture of one or other of the scenes around Vancouver, suitable for framing.

Recent advices from Parksville, B. C., say that information is expected shortly regarding a trial shipment of red fir pulp wood sent lately to Port Angeles, Wash., for cooking and report. Other kinds of pulp wood will be shipped from that district by Chamberlain Bros., who expect to employ a large number of men in the locality. Should the tests prove satisfactory, there is a vast supply of timber of suitable size there, and it is expected the industry will develop rapidly. In the event of a harbor having to be constructed, it is probable that the mouth of French Creek, two miles away, would be converted into a site for boom supports to store the cordwood.

Manitoba's Newsprint Mill to Be at Fort Alexander

George R. Gray, of Sault Ste. Marie, Ont., manager of the woods department of Spanish River Pulp & Paper Mills, was in Winnipeg recently, accompanied by William N. Hurlbut, expert paper-mill engineer of the company from Dayton, Ohio, in regard to the selection of a site for the newsprint mill, which will be erected at Fort Alexander. This is at the mouth of the Winnipeg river, a short distance from Victoria Beach, on the Canadian National Railway's Lake Winnipeg branch, and is about 75 miles north of Winnipeg.

Mr. Gray said that although the contract with the Canadian government in the matter of the McArthur-Spanish River deal called for the erection of a 100-ton mill within eighteen months, the company intended to go right ahead and put up a 200-ton mill. The company are keen to begin construction work at once, owing to the fact that but little building could be carried on during the severe winter months. The mill will cost about $4,500,000 and will give continuous employment to some 500 men.

Paper Mill for Greater Winnipeg

Assurances that they were prepared to go ahead immediately with the construction of a $5,000,000 paper mill, with a daily capacity of 250 tons, in the Greater Winnipeg district, provided the Dominion government entered into a contract providing pulpwood and water-power rights, were made a short time ago by George M. Seaman, of the Seaman Paper Co., Chicago, and E. W. Backus, of the Backus-Brooks interests in Canada and the United States.

"My only intention is to build as quickly as possible a 250-ton mill that will not manufacture pulp for sale, but will manufacture newsprint entirely," said Mr. Seaman, while Mr. Backus declared, "Mr. Seaman has committed himself to erecting in greater Winnipeg a mill, and I am going to stick by him in that determination."

Following a conference which was held in Winnipeg, Hon. Charles Stewart, minister of the interior at Ottawa, stated that the Backus-Seaman application for a pulp-wood berth in northern Manitoba will be approved by the federal government, and that he intended to issue a contract immediately on his return to Ottawa.

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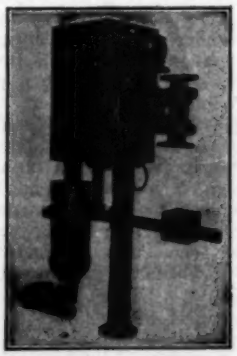

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New England News

August 1, 1925.

A. W. P. Co. to Sell Ohio Mills

In the closing days of August came an important announcement from the Federal Equity Court at Boston relative to the American Writing Paper Co. Though the reorganizations committees are still struggling with plans which, despite premature announcements, have not been formulated, the company continues to make real progress under the able direction of Receiver Willson. This latest announcement is such a progressive step that Judge Lowell authorizes the appointment of a special master, who will be Mr. Willson, to immediately sell the so-called Harding properties of the American Writing Paper Co. in Ohio. These comprise the mills at Excello and at Franklin, the former a producer of bonds and writings and the latter merely a rag sorting and cutting plant (at least of late years), where raw materials are prepared for the Excello Fourdriniers.

Although appraised at nearly $500,000 by the American Appraisal Co., Mr. Willson urged an upset price of about $214,000 for the auction, believing that large expenditures would be necessary by any purchaser to put the property in the condition requisite to efficient operations. The court, consequently, orders this as a minimum at the forthcoming sale, which is to be held at the main doors of the Excello mill, the date to be announced later.

An interesting and possibly a significant fact in the judge's order is the specific permission given creditors, bondholders, trustees for the latter or stockholders, of bidding at the sale. Another important fact is that the sale must be in one parcel, the entire property to be sold. The arbitrary figure set by the court is the proportionate share of the first mortgage bonds represented in this property. The Franklin Hydraulic Co., which supplies the Franklin mill with water power, while the property of the American Writing Paper Co., is not subject to the first mortgage.

Proceeds from the sale are to be applied against outstanding taxes on the Ohio property and any remainder will be used to retire indebtedness incurred to meet taxes on Holyoke or other property.

Pepperell Suit Cleared Up

By the transference of ownership from Raisford Deware to his main source of raw material, the suit of the Amoskeag Paper Mill vs. The Pepperell Card & Paper Co., whereby the latter company had been in receivership since last November, is virtually cleared up. An agreement was reached out of court by which the stock of the company, excepting only two qualifying shares to J. H. Cashman, former receiver, and to A. B. Carpenter, becomes the property of Frank B. Carpenter, president of the Amoskeag Paper Mill, of Manchester, N. H., manufacturers of cover and book papers. In return for this, Mr. Carpenter certifies that checks have been sent to all creditors with approved claims against the company. Also those claims outstanding against the receiver were liquidated. The latter included bills payable to the Fitchburg Paper Co., Babbitt Kelley Co., Kalbfleich Corporation and J. A. & W. Bird Co., as well as $12,000 to the Amoskeag Paper Mill. The Pepperell Co. continues to operate under its new ownership.

Offer for Uncas Board Co. Rejected

The two definite steps towards settlements of these outstanding sore spots in the New England trade noted above were decidedly encouraging to the trade if the comment of leaders could be taken as indicating that feeling. Unfortunately, however, one mill property, that of the Uncas Paper Board Co., of Norwich, Conn., continues to remain in an unchanged condition and that condition is bad. A definite offer of around $225,000 to $250,000 over and above the first mortgage, which is said to amount to about $150,000, was offered by the big paper board interests, including Robert Gair, Burgess, Alford Jacobs and others, was rejected by creditors, stockholders and others at a meeting held in Norwich on July 21. It is said that the vote to reject was unani-

Progress in Paper Making

WITH progress in American paper making, we are concerned and connected. To commemorate the advances that have been made, the more important annals of the industry will be recalled from month to month in this space.

Pioneer Screens

Originally one of the regular operations of paper making was picking out lumps from the finished sheets. In 1830, Richard Ibotson of England invented a parallel rod-strainer to separate knots from the paper stuff. Two years later, his invention was modified by Henry Brewer of England who constructed square boxes with grid iron bottoms which were given a powerful up-and-down vibration in the pulp tub by levers, rotary shafts, and cranks. In these two inventions, we find the forerunners of the modern screen.

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Experienced and Progressive

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DEPENDABLE POWER

FLEXIBLE as belts, positive as gears, more efficient than either. Run slack on short or long centers thus absorbing shocks, guarding motors and machines from injury. Friction loss less than 1½%. From ¼ H.P. to 5,000 H.P. Speeds from 6,000 to 250 RPM. or slower.

Morse Chair Company, Ithaca, New York

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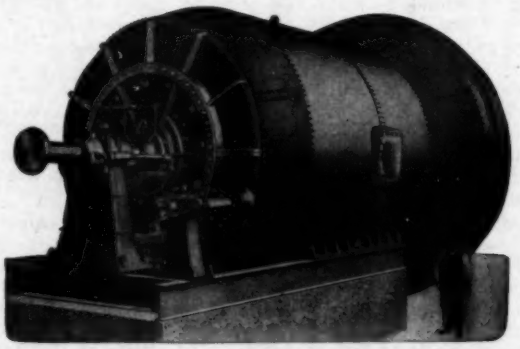

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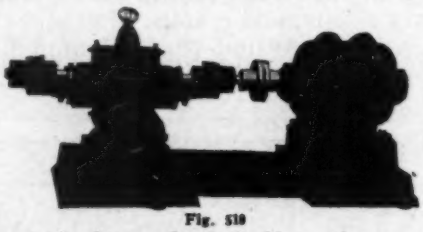

Fig. 510

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is equipped to make tests, on a commercial scale [under the direction of Prof. W. L. Badger] on problems involving evaporation, crystallization, heat transfer, etc., at a moderate charge.

mous, although it would have amounted to about 30c on each dollar of merchandise claims, besides retiring the bonded indebtedness.

There is every reason to believe that the offer to purchase was actuated by a desire to dismantle the property on the theory that overproduction is one of the present evils of the industry.

Some 1500 employees, guests and officials enjoyed the annual outing of Hollingsworth & Vose Co., held at Lake Nipmuc Park, Mendon, Mass., on July 18. Games for men and women, tug of war, dancing and swimming made it a delightful outing for all, there being some diversion to suit every taste. An open air banquet was served in the evening. Large busses brought the crowd from many points.

Many mills in the Connecticut Valley are said to be down for repairs or alterations. The Valley Paper Co. is making improvements on a machine and the Missisquoi Pulp & Paper Co., of Sheldon Springs, Vt., are installing new machinery, according to some recent information.

Train, Smith & Co., probably the largest graders of new cotton cuttings in New England and packers of old paper-making rags, and importers of all kinds of paper mill supplies, have just acquired a new three-story and basement brick building on the corner of Maple and Summer streets in Chelsea, Mass. They will shortly occupy the new structure and are at present fitting it up with offices, new baling presses, sorting rooms, etc. They will retain their old packing plant on Spruce streets for storage. Each floor of the new building, which is fireproof, has 4,200 square feet.

Moosehead Paper Co. Destroyed by Fire

Estimates of the loss caused by the fire to the Moosehead Paper Co., in Skowhegan, Me., vary from $160,000 to $190,000. The mill, which some years ago was quite well known in New England as the Savage Manufacturing Co., was totally destroyed by fire last month, although Mr. D. A. Chapman, of Boston, the president, states that the loss was very largely covered by insurance. Mr. Chapman states, however, that up to this writing no definite plans to rebuild have been made.

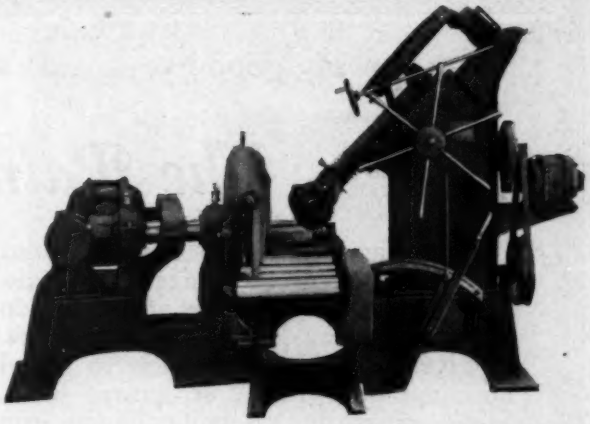
The present owners secured control a year ago, incorporating the new company under Massachusetts laws. John J. Moore, a local civil engineer, became chairman of the board and Mr. Chapman president. New machinery was installed and paper drinking cups and towels were manufactured quite successfully for a time, though the plant had been idle for some months prior to the fire. Prior to the present owners, it had, aside from beaters and a refiner, a 90-inch Fourdrinier.

Rosmarg Co. Offers to Purchase Whitmore

It is expected that the Rosmarg Coated Paper Co. will purchase the assets of the Whitmore Mfg. Co., of Holyoke, at the sale to be held this month under the auspices of the Federal Equity Court at Boston. The former concern has made an offer that will undoubtedly prove acceptable and that appears to be higher than anything previously mentioned. The property to be sold includes the land, buildings, machinery equipment, good will, trade names and in general all of the property of the Whitmore Mfg. Co. There is to be excluded from the sale several parcels of raw material, including satin white, blank fixe, casein, etc.

The price offer totals $150,000, which includes $100,000 for the first mortgage, held by the Holyoke Savings Bank. The Rosmarg Coated Paper Co. also offers $15,000 for certain lots of paper in process. John J. White, treasurer and general manager of the Rosmarg company, makes the offer to Russell L. Davenport, receiver for the Whitmore Mfg. Co.

The Pejepscot Paper Co. is becoming an important water power factor in New England. Recently, they incorporated a subsidiary company under the name of the Androscoggin Water Power Co., and thereafter conveyed to this concern property worth $300,000. The property included land, building, dams, waterpower rights, machinery and flowage privileges.



Built for Its Job!

ACKNOWLEDGED by all mill men as the greatest labor and material saving barker of the present day.

Now built stronger and better than ever—equipped with 6 knife head instead of 4—*cuts down waste and increases production.* The only knife barker with adjustable knife feature—so built that adjustment is made while machine is in operation, by simply moving a lever. The only barker that will regulate the speed of the wood moving through the machine. Crooked wood can be barked without any more waste than straight wood.

It's all adjustable—to fit any local condition.

Green Bay Barker is one of the necessary pieces of equipment in any pulp mill. It is built especially for operation on spruce logs.

The many users are our best endorsement. Ask any mill who has them.

GREEN BAY BARKER CO.

GREEN BAY, WISCONSIN

Makers of the famous Barker-International Pulp Screens

"You can say good-bye to rust when you paint with BITUMASTIC"

The Paint Question

Your search for a paint that will stand up under moisture, chemical fumes and heat conditions comes to an end when you begin using BITUMASTIC SOLUTION. It gives enduring protection to metal buildings and roofs, structural steel, tanks, pipes, stacks, boiler fronts and breechings and other steel surfaces. It has a fine glossy finish that lasts. The sooner you start using BITUMASTIC, the sooner your worry over the paint question ceases.

The most convincing argument in favor of the use of BITUMASTIC SOLUTION is the performance of the paint itself. We are willing, therefore, to send a sample can, without charge, to interested executives and engineers.

SINCE **BITUMASTIC** 1854

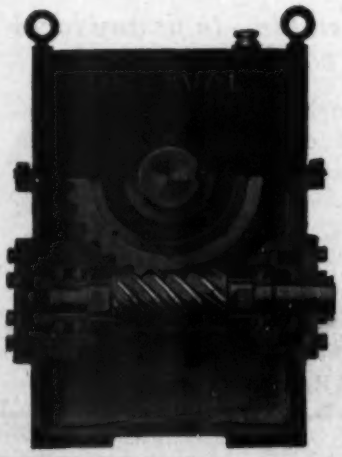
WAILES DOVE-HERMISTON CORPORATION

17 BATTERY PLACE, NEW YORK

322 S. Delaware Ave., Philadelphia — Union Trust Building, Cleveland

GURNEY BALL BEARINGS

Add Efficiency to Speed Reducers



Due to their ability to safely carry extremely heavy loads, Gurney Ball Bearings—Maximum Service—Maximum Capacity type—are better suited for use in speed reducers than are bearings of any other type. By using the largest number of balls of the largest possible size in uninterrupted raceways of the closest permissible race curvature, Gurney Maximum Service-Maximum Capacity bearings have higher load carrying Capacities than other types, resulting in the maximum of safety, service and efficiency.

MARLIN-ROCKWELL CORP.
JAMESTOWN, N. Y.

GURNEY

18311

Three power sites used partly by paper mills are now developed and a fourth is to be started soon.

Students of the Massachusetts Agriculture College summer school were recently conducted on a tour of paper mills in the Holyoke district. They saw the operations of the Chemical Paper Mfg. Co. and the Crocker McElwain Co. in detail.

The old Kennebec Pulp Co., a ground wood mill in Skowhegan, Me., has been sold to Daniel E. Cummings Co., a shoddy manufacturing concern, who will convert it into a textile mill. The pulpwood at this plant, of which there was considerable, has been sold, the spruce having been bought by the Keyes Fibre Co., and the poplar by the Oxford Paper Co. The greater part of the machinery was sold for scrapping to a dealer in Gardiner, Me.

Old Machinery House Is Sold

The Watson Frye, Ltd., of Bath, Me., well known in the past as manufacturers of various types of paper and pulp mill machinery, have been sold to a group of New York capitalists and will be devoted in the future exclusively to the manufacture of equipment for paper and pulp mills.

The new owners are said to be assured of success by the access which they enjoy to many important paper machinery patents. They are even said to have orders on hand for these patented types of pulp, and paper machines to guarantee operations for the near future. It is planned in fact to enlarge the existing buildings in the near future to provide for the expected growth in the business. Harry E. Tidemarsh, considered one of the ablest paper machinery manufacturers in the east, has been retained to superintend operations. He will reside in Bath as resident manager. He comes from the Union Iron Works, of Bangor, Me.

Of considerable interest to the paper board manufacturing trade will be the news that the Hoague-Sprague Corporation, of Lynn, Mass., the largest manufacturer of paper shoe cartons in the world, has been sold to the United Shoe Machinery Corporation, of Beverly, Mass. Messrs. H. Morton Hoague and Charles F. Sprague retain a 40 per cent interest in the company and will continue to manage it for the new owners.

The Davis Paper Co., of West Hopkinton, N. H., are rebuilding their warehouse for paper stock storage destroyed by fire some five or six weeks ago. This warehouse is located on a height and has a concrete base. It is expected that the company will provide more safeguards against future fire hazards, although as it has been open air storage in the past. Sprinklers would probably be out of the question, owing to the severe winter weather and consequent freezing.

. A bond issue for $1,500,000 is part of the program announced by the Pejepscot Paper Co. in connection with its water power development on the Androscoggin River.

Mr. and Mrs. Herbert E. Fales sailed on the SS. Samaria of the Cunard line for a European tour last week. Mr. Fales is treasurer of Hollingsworth & Whitney Co.

Tileston & Hollingsworth Co. Has Increased Capacity

The storehouse for one million pounds of paper, built by Tileston & Hollingsworth Co., of Mattapan, Boston, is ready for use. It is rapidly filling with paper, and large customers will have a part of their future requirements stored here ready for immediate shipment. It will enhance uniformity and in every way facilitate the company's service to the New England trade. Every pound of paper is piled on wheeled skids for quick handling.

Incidentally, Tileston & Hollingsworth are completing the installation of the new machine which has been building at the shops of Rice, Barton & Fales in Worcester for nearly a year. It is the last word in paper making design and will be an increase of 50 per cent over the capacity of the machine

Flawlessly ground and highly polished for flawless slitting—

—that's the Camachine Score Cutter Backing Roller. The hardened steel shells which compose it are ground to uniform diameters, then highly polished, lapped, and mounted on a core shaft to present a flint-hard, bright, uniform surface entirely across the roll.

The slitting is done with tough steel wheels which are spring-pressed against this roller. *And because this roller cannot be dented or scored,* and never needs attention, the Camachine Score Cut method of slitting any material saves you money—does its work quietly, year after year without lay-off—and does it as well as it can be done. Will you let us tell you more about it?

Tear out and mail the coupon

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61 Poplar St., Brooklyn, New York.
Send me further information on Camachines for producing rolls of.....
width.....diameter.....speed.....f.p.m.
Name.....
Reply attention of.....
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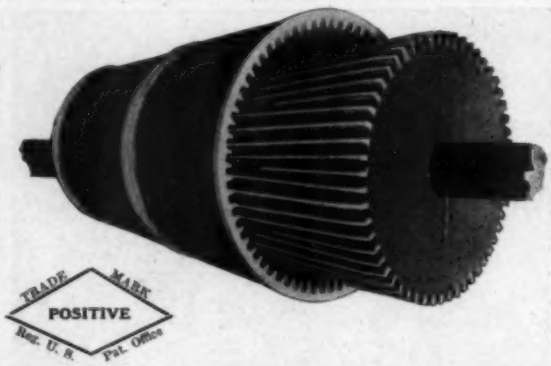


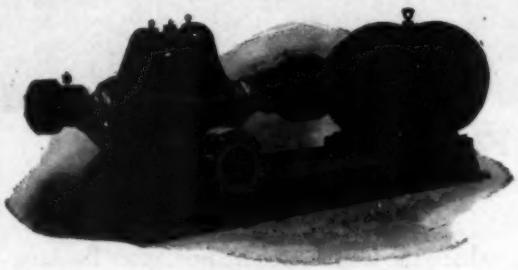
Are you interested in a Jordan Filling that has stood all competitive tests since the year 1910?

IF SO

Forward your inquiry to

THE BAHR BROS. MFG. CO.
Marion, Indiana, U. S. A.

Aurora Centrifugal Pumps



Type OMD

Aurora pumps are made in many types, to meet all conditions found in the paper mill field.

We specialize in horizontally and vertically split open and inclosed impeller, single and multi-stage and deep well turbine centrifugal pumps as well as deep well reciprocating pumps.

A card from you stating your conditions places our engineers at your service and results in a saving to you.

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Estimates and gear advice promptly and cheerfully given

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INDUSTRIAL—AGRICULTURAL—MUNICIPAL—RESIDENTIAL

A Type for Every Service

THE GOULDS MANUFACTURING COMPANY
SENECA FALLS, N. Y.

GOULDS

THE JOHNSON FRICTION CLUTCH

Single Clutch Pulley

Use Johnson Clutches for Paper Machines

The exceptionally smooth pick-up when the clutch is engaged makes the Johnson especially adapted to operate paper-working machinery. It is so constructed that the operator with his hand on the shifting lever has absolute control of the clutch.

For starting, stopping and controlling paper machines the Johnson Clutch is unsurpassed. Paper-making plants all over the country are using them with highly satisfactory results. Even far-distant Siam has its Johnson Clutches; they are giving splendid service on a government-owned Fourdrinier. Equip with Johnson Clutches.

Write for Catalog "P. I."

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

it replaces. Already many orders have been received for the new machine, according to the company. It is estimated by the company's general manager, A. V. Howland, that the old machine, which is being dismantled, had made 125,000,000 pounds of paper during its service.

The annual shutdown period of the Holyoke Water Power Co. ended on August 1 and the mills of the Paper City should be in operation Monday, at least those that derive their power from this well known concern.

It is reported from Roberts, Mass., that the Charles River Paper Co. has purchased a plant and plans to manufacture fibre paper.

Edwin C. Robertson

Edwin C. Robertson, formerly a well known Holyoke paper manufacturer and for the past few years president of the Robertson Paper Company, of Hinsdale, N. H., died Saturday, August 1, after a brief illness, during which he had been receiving special medical treatment. The Robertson Paper Company operates three mills: two at Hinsdale, N. H., and one at Bellows Falls, Vt.

Mr. Robertson's career started in Holyoke, where he commenced paper manufacturing with his uncle, John Robertson, in 1880. Later he and his brother took over their uncle's share of the company and operated the mill as Robertson Brothers. A large part of his life was thus spent in Holyoke, though he was born in Hinsdale and eventually returned there to organize the well known tissue paper business which bears his family name. In 1883, their first New Hampshire mill was constructed at Ashuelot, as Robertson Brothers. A second mill was constructed in 1901 by E. C. Robertson & Son, and a third in 1909, when the firm became known as W. F. Robertson & Co. The three plants were consolidated into a corporation of which E. C. and W. F. were sole stockholders, Edwin C. becoming president. Hinsdale is known today as the Tissue City.

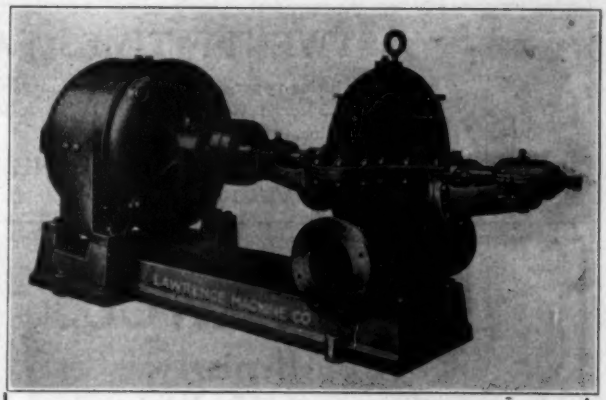
Mr. Robertson has occupied a conspicuous place in the paper trade, being accepted as the leader of the tissue paper industry in New England. Nationally, his ability and prominence was recognized when he was elected vice-president of the American Pulp & Paper Association, and president of the National Association of Tissue Manufacturers.

Outside of his paper interests, he was active as a director of savings banks, in the Hinsdale Chamber of Commerce, and socially was prominent in the Masons. He was married in 1878 and is survived by his wife and a son, Winfield, who will carry on the business.

It is understood that an American branch of the Bemberg and associated interests of Germany are about to erect a plant in or near Norfolk, Va., for the manufacture of rayon or artificial silk. Incorporation papers filed by the American Bemberg Corporation with the Secretary of State of Delaware show a capitalization of $17,500,000, composed of 350,000 shares of preferred stock of $100 par value and 140,000 shares of common stock of no par value.

A. Price Dillont has returned to the paper business after having been connected with outside interests for a few years. His present connection is with Bulkley, Dunton & Co., at 75 to 77 Duane street, New York, whose office is directly opposite the location of the paper house in which Mr. Dillont started a number of years ago. His wide experience in paper, printing, lithographing and the allied trades fits Mr. Dillont admirably for selling paper, and his past history as a successful salesman in the business points to an encouraging outlook for him with the widely known and highly respected house of Bulkley, Dunton & Co.

H. M. Bach, assistant director of purchases for the Barrett Company, manufacturer of roofing and other papers and other products, sailed from New York on July 8 for Europe. At the offices of the company at 40 Rector street, New York, it was said no statement would be made concerning Mr. Bach's trip abroad.



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ALBANY GREASE

The 100% Lubricant —Never Drips

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Albany Grease has been out of the experimental stage for almost 80 years. Use it on your shafting, conveyors, grinders, etc., and get more power. Free sample on request.

The Albany Grease Trade Mark is on every can and barrel—look for it for your protection

Your dealer can supply you. If not, write us.

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"TWENTY TIMES FASTER THAN BY HAND"

For lifting paper rolls, removing calender rolls or raising Fourdrinier wires, use ROEPER Type "R" Electric Hoists—With or without Trolleys—Speeds up to 40 feet per minute—Send for Bulletins.

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ECONOMIZERS
Reduce fuel costs by making use of waste exhaust gases to preheat the boiler feed. Patented construction proven by 28 years of service.

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Improve engine, turbine and boiler economy by enabling a given amount of steam to do more work. Over 10,000 installations in stationary power plants.

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WEBSTER QUALITY

Steel and Malleable Chains for Pulp and Paper Mills

WHATEVER the type of chain that best meets your own peculiar requirements, Webster has it, and when you have made sure that the chains you employ in your mechanical handling devices bear the —Z— trade-mark of the Webster works, you have gone a long way toward profitable operation in your plant.

Webster chains for mechanical handling devices in pulp and paper mills consists of pintle chain, detachable chain, combination steel and malleable iron chain, riveted and detachable drag chains, and steel pushed roller drive chain.

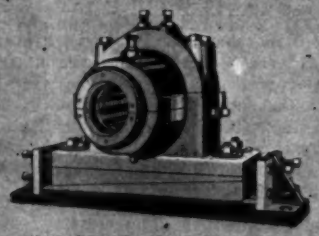
Our 96-page catalog No. 46, covering our complete line of chains and sprockets, will be forwarded to you on request.

THE WEBSTER MFG. CO.
4500-4560 Cortland Street
CHICAGO

"VALLEIRON"

"HERCULES HYATT"

DUST PROOF ROLLER BEARINGS
POWER TRANSMITTING APPLIANCES



—INDISPUTABLE FACTS—

THE ROLLERS ARE FLEXIBLE: Their slight flexibility takes care of irregularities in the surface of the shaft as well as all shaft distortions caused by belt pull or misalignment of shafting.

IT IS SELF-LUBRICATING because each of the hollow helically wound rollers acts as its own oil container and oil distributor, insuring positive lubrication over all rolling surfaces. There is no oil leakage and the economy is such that lubrication three or four times a year is sufficient in most cases.

IT IS DURABLE because its steel rollers are capable of giving years of hard service with no appreciable wear. It is not affected by shock loads, vibration or by other loads within the capacity of the shaft.

POWER SAVING: By eliminating 50 to 80 per cent. of friction, make possible a saving of 10 to 25 per cent. on the whole power transmitted. This power saving at forty to fifty dollars per horse-power per year will result in a return on the investment of from 50 to 125 per cent.

VALLEY IRON WORKS
WILLIAMSPORT, PA. U. S. A.

"VALLEIRON"

New York City News

August 1, 1925.

P. T. Dodge Resigns from I. P.

Philip T. Dodge on July 9 announced his resignation as a director and chairman of the board of the International Paper Company. The resignation was accepted by the board with great regret, terminating as it did a connection with the company dating back a dozen years. Mr. Dodge served in the newly created office of chairman of the board for about a year, following eleven years' service as president of the company. He left recently for England, where he expects to spend a great deal of his time, largely in the interests of the Mergenthaler Linotype Company, which he developed and managed prior to his relationship with the paper corporation.

Mr. Dodge became president of the I. P. Company in 1913, when it had been unable for years to pay its preferred dividends in full, and when the company faced many problems. He successfully built up the company, enlarged its facilities and developed its resources and brought it to be one of the largest, if not the largest, paper manufacturing concern in the world. It was said that Mr. Dodge encountered some friction with some of the stockholders because he adhered to a policy of diverting earnings to improvements and extensions, but as no dividends on the common stock of the company have been paid since 1899, and the present management adheres to the policy, it is assumed that the common stock dividend situation had nothing to do with Mr. Dodge's resignation.

The New York & Pennsylvania Company, paper manufacturers with main offices at 200 Fifth avenue, New York, has been incorporated under Delaware laws with a capital stock of $9,000,000. The incorporators were August G. Paine, Gibson Paine and Eustis Paine, of Willsboro, N. Y.; Robert Wetherill, of Chester, Pa.; Calvin R. Armstrong, of Lockhaven, Pa., and John S. Parker, of South Orange, N. J.

May Protest Newsprint Definition

According to reports reaching New York from Washington, paper importers may protest the amended newsprint definition promulgated recently by the Customs Service of the Treasury Department. If an effort is made to have the definition rescinded, the matter will come up in the United States Court of Customs Appeals.

Representatives of domestic manufacturers feel, it is understood, that if the matter does get into the courts the new definition will be sustained.

Frank O. Sullivan, formerly director of the photo-litho division of the F. Wesel Manufacturing Co., Inc., of Brooklyn, N. Y., is now associated with the Eastern Manufacturing Co. as director of the offset paper division. Mr. Sullivan will devote his wide knowledge of offset printing to the development of this division, which will handle offset book paper and offset bond paper. Mr. Sullivan has long been engaged in the printing and publishing field, and at one time was editor of "The Offset Printer."

The Smith Paper Co., of Lee, Mass., manufacturer of tissue papers, has opened a New York sales office at 511 Fifth avenue, with Charles F. Mansfield, formerly with the American Writing Paper Co., in charge.

The John F. Sarle Co., one of the oldest and best known paper jobbing concerns in Greater New York, of which Kit S. Warner is president and general manager, has removed from 85 John street to new and larger quarters at 46-50 Hudson street, New York. The building now occupied by the firm is one of the finest in this city devoted to the paper business.

Fred Enders and J. O. Bulkley, of the wood pulp department of Bulkley, Dunton & Co., 75 Duane street, New York, have returned from an extended trip calling on pulp manufacturers in Scandinavia as well as visiting England and on the continent.

Harry and Ben L. Gerofsky, dealers in new cotton cuttings for paper mills at 15-17 Greene street, New York, have incorporated their business under New York State laws with a

Are Your Power Costs Down to Bed Rock?

Possibly you could show a real saving by a slight rearrangement of your power transmission system.

Where certain somewhat unusual conditions must be met, individual motor drive has its place—but otherwise group drive is cheaper and more satisfactory. See what these five famous engineers have to say on this subject:

Frederick W. Taylor:
"The writer is firmly convinced . . . that in perhaps three cases out of four a properly designed belt drive is preferable to the individual motor drive for machine tools."

Carl Barth, M. E.:
" . . . during the past decade hundreds of thousands of dollars, if not millions, have been more than wasted by the substitution of motor drives for belt drives."

Harrington Emerson:
"If the machine is belt-driven, it is the belt that slips or at the worst is torn in two. If the machine is driven by chain-driven motor, the gears are stripped and the machine is out of commission for several months."

Robert W. Drake:
"Fifteen years' experience has convinced the writer that the field of group drive is much broader than was originally surmised."

Terrell Croft:
" . . . it is certainly a fact that individual motor drive has been employed in many applications for which group drive would, on an annual-charge basis, have been more economical."

From the addresses and papers of these five recognized authorities a booklet has been prepared setting forth clearly and impartially the mechanical economics of the individual motor drive and the group drive. Let us send you a copy—you will find it thoroughly worth while.

The Leather Belting Exchange has nothing to sell. It is a service organization having as its sole function the aiding of power users toward the more economical, efficient, and satisfactory distribution and utilization of power.

Leather Belting Exchange
Philadelphia, Pa.

LEATHER BELTING EXCHANGE
417 Forrest Building, Philadelphia, Pa.
Please send me a free copy of your booklet, "Eminent Engineering Opinion on the Belt Drive."

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Nothing takes the place of
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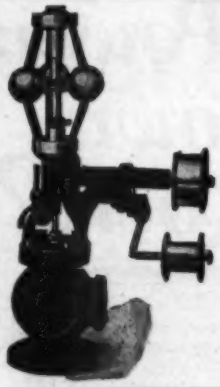


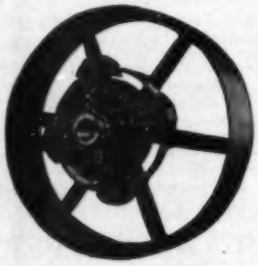
How Much *Paper* Are *You* Losing Because of Uneven Thickness?

During the past three years we have developed wide experience in building Governors for Engines and Turbines in Paper Mill service, resulting in uniformly thick paper, and a considerable increased production.

Catalog 32 on request.

THE PICKERING GOVERNOR CO.
Portland, Conn., U. S. A.

A complete line of



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Power Transmission Machinery

FOR

BELT AND ROPE DRIVES

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THE FALLS CLUTCH & MACHINERY COMPANY

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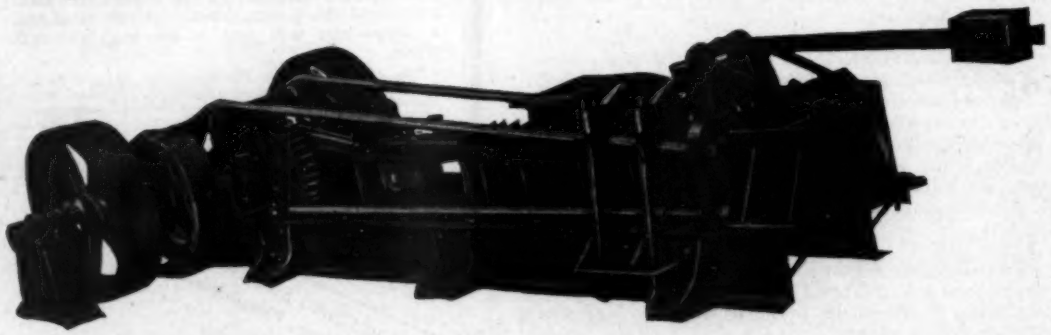
Catalogues upon request

Repeat Orders Prove Success of the



Improved

GIANT NEKOOSA BARK PRESS

Prepares Bark for Fuel 52 Per Cent Dry

NEKOOSA MOTOR & MACHINE CO., Nekoosa, Wis.

capital of $100,000. Harry, Ben L. and R. Gerofsky were the incorporators.

No Paper Industries Exposition Till 1927

An announcement has been received that the Third Paper Industries Exposition, which was being planned for the week of February 22nd, 1926, in New York City, will not be held until 1927 when the American Paper and Pulp Association celebrates its fiftieth anniversary.

The Public Service Cup Company, manufacturers of the Lily Cup, have signed a lease for 96,898 square feet of space in the Bush Terminal Company buildings 19 and 20, South Brooklyn, according to an announcement made by the Bush Terminal Company which states that 10,941 square feet is for new space and that 85,957 square feet is covered by a renewal of the paper cup manufacturing company's old lease.

The Hersey Paper Co., which has incorporated recently with a capital stock of 250 shares of $100 each and 400 common shares of no par value for the manufacture of waterproof paper, has moved from 264 Eleventh avenue to 521-523 West Twenty-sixth street, New York. New equipment is being installed which will greatly increase the company's output. The incorporators were T. F. and J. F. Hersey.

The Holyoke Paper Corporation, of New York, was incorporated on July 16 under New York State laws at Albany, with a capital stock of $15,000, by L. Jacobs, C. F. Heaphy and J. Kleiner. Offices of the company are at 487 Broadway, New York.

The J. E. Linde Paper Co., among the largest jobbers in New York, with offices and warehouse at the corner of Beekman and Cliff streets and a branch in Newark, N. J., has been appointed a distributor in the metropolitan district of the S. D. Warren Company lines of paper.

The Upsom Company, of Lockport, N. Y., manufacturer of paper and fiber boards of various kinds, has filed notice of an increase in capital stock from 20,000 to 170,000 shares, of which 20,000 are $100 value each, 75,000 common Class A and 75,000 common Class B of no par value.

Sales of the Tulip Cup Corporation, of New York, during June were approximately double those of the same month last year, according to a statement issued by the company a few days ago. Sales for the six months ended with June were 50 per cent larger than in the corresponding period last year.

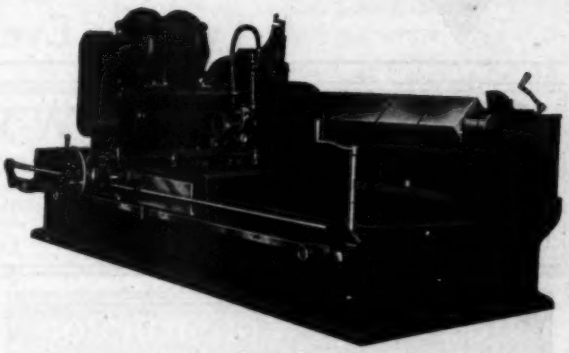
Spokesmen for 912,000 traveling salesmen will meet in New York City on September 1, 2 and 3 to lay plans for a year ahead to promote the ideal typified by their association, "For Bigger, Better Business." The occasion will be the annual convention of the National Council of the Traveling Salesmen's Association, whose membership includes the Salesmen's Association of the Paper Industry.

The St. Regis Paper Co., of Watertown, N. Y., has removed its New York office to 49 Wall street.

Annual Paper Trade Publication

"The Paper Makers' Directory of All Nations," a well known publication in Great Britain, for the year 1925 has just been published. It contains many improved features and is particularly easy of reference, being alphabetically arranged throughout, both as regards countries, mills and mill production, the last being classified in three ways, under goods, country of origin, or name of firm. Thorough corrections have been made and the sections dealing with Czecho-Slovakia, Hungary and Lithuania have been wholly recast. It has become possible to give an entirely new schedule of some eighty paper, pulp and board mills actually working in Russia. The publishers are Dean & Son, Ltd., 29 King Street, Covent Garden, London, England.

KNIFE GRINDING



We have specialized in knife grinding and saw fitting service for over fifty years and have made some especially interesting developments in recent months. Our new general catalog No. 36 covers more constructions, both new and old, for saw, knife and shear blade grinding than have ever before been assembled in one publication. Sent free upon request.

MACHINERY COMPANY OF AMERICA
Big Rapids, Michigan U. S. A.

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Sprinkler Heads

APPROVED BY—

THE ASSOCIATED FACTORY MUTUAL FIRE INSURANCE COMPANIES
and the
UNDERWRITERS' LABORATORIES
CHICAGO

AUTOMATIC SPRINKLERS

You should carry a stock of Sprinklers on hand. If a fire occurs you can replace the opened sprinklers and restore the protection without delay.

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Main Office: 54 Batterymarch St., Boston, Mass. *Works:* Laconia, N. H.

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"RILEY" Underfeed Stokers | "JONES" Underfeed Stokers | "HARRINGTON" Traveling Grate Stokers

"MURPHY" Automatic Furnaces | Pulverized Coal Installations

9 Neponset Street, WORCESTER, MASS., U. S. A.

A Type for Every STOKER Need

PRESSURE PIPE THAT NEVER BURSTS
Built in sizes 1 inch to 48 inches

WYCKOFF WOOD PIPE

The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for Paper Stock and Acids that can be obtained.

Write today for catalog and prices

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Steel Plate Construction

Steel Storage Tanks, Blast Furnaces, Gas Holders
Steel River Barges and Plate Work of all Kinds
Steel Transmission Towers

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"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

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LINDSAY WIRES

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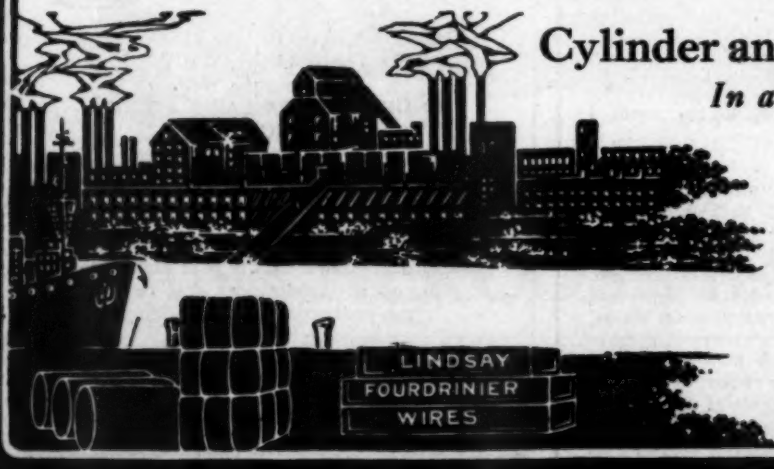
DURABLE AND DEPENDABLE

Made in all sizes



Cylinder and Washer Wires

In all Meshes

The Lindsay Wire Weaving Company

Collinwood Sta. Cleveland, Ohio

British Correspondence

Conditions in British Paper Industry

Various reports indicate that the position in the paper trade in this country is unchanged, but an improvement was hardly to be looked for at this time of the year. Merchants as well as papermakers complain that orders are scarce, and only those importing agents who are doing a good seasonal trade in foodstuff wrapping are satisfied with the conditions of affairs.

The consumption of paper in connection with this year's British Empire Exhibition at Wembley has not meant so much to paper merchants this year as it did last. Exhibitors are much more sparing with their propaganda and, in any case, there are less exhibitors to consume the paper. The same applies to this year's Advertising Convention. Last year it was held at Wembley and the consequent increase in the consumption of paper and print as a basis for printed publicity or advertisements was a factor of more importance than any exhibition. This year the convention was held in much less pretentious style at Harrogate, and the demands for paper for advertising purposes were exceedingly moderate.

The newsprint mills are mostly well provided with forward orders, mainly for home consumers and Australia, but they have now to face the possibility of an early pact between Australia and Canada, under which newsprint from the Dominion will enter the Commonwealth under the same terms of preference as our own. This is a serious prospect for most paper mills, but the hope is entertained that the good reputation borne by most British papermakers may count for a great deal, and that, despite Canadian competition on an equal tariff and shipping rate basis, we may still hold our own. It has to be realized, however, on the other hand, that while Canada has her own timber resources, we are still dependent for supplies of raw material from Scandinavia. It must also be noted that newsprint made in Canada and Newfoundland is produced for our own newspapers and received here at prices which compare favorably with the figures of our own mills.

It must also be remembered that Canada cannot afford to neglect the U. S. market, and in view of these facts Canada is adding rapidly to her mills and equipment and is putting her newsprint industry above that of any other country in the world. It is plain enough that while we may not lose the Australian newsprint market, we must certainly not minimize the seriousness of the challenge embodied in the proposed compact.

In the wrapping section of the industry the situation is much more serious. The mills that are best equipped are losing money and cannot secure enough business to keep their machines in operation. Kraft papers cost more to make than the quoted market figure of Scandinavian manufacturers. Specialty browns and wrappings which northern mills in particular used to account a sound asset in their trade have but a poor demand, owing to the decline in the textile trade. Cotton manufacturers are not using one-half of their normal requirements, owing to the conditions that prevail in the near and far East.

For the thin wrappings which are used in increasing volume in the home trade, English mills are not particularly well equipped, and in any case they cannot hold their own against Scandinavian and German competition. The Board of Trade returns reflect the conditions in regard to wrappings very clearly. For the five months, January to May, 1924, our exports of packings and wrappings were 273,609 hundredweight, against which the corresponding total this year amounts to 96,843 hundredweight. The export trade has therefore gone down to a negligible figure. In 1913 we exported 905,452 hundredweight of these papers—that is for the whole year. Taking imports, the total for January to May, 1924, was 1,554,309 hundredweight, and this year for the same period the Board of Trade returns record 1,818,598 hundredweight. Again referring to 1923 for a pre-war comparison, it will be seen that our imports totaled 4,090,296 hundredweight for the year, so that while our export trade is declining, imports have increased over the normal volume of a pre-war period.

The majority of the fine writing mills could do with more business. Export trade is well maintained, but home demand continues disappointing. In the hand-made section many vats

"Nary A Spark—"

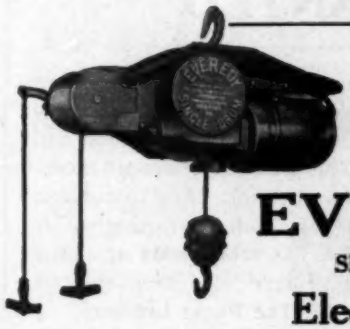
from the motor when we started, then jerked the loaded hoist into reverse.

"Show me," he said, so with the loaded Everedy Hoist traveling downward, we jerked the cord into reverse, with "nary a spark" from the motor.

Ed. Harwick was the hardest man we ever had to sell. But Ed. will tell you himself that "no other hoist has so convincingly demonstrated the superiority of its motor as the Everedy."

This motor is designed especially for hoisting, built to endure. It is easy on the commutator and brushes, maintaining a high operation efficiency.

Besides the Everedy is the most accessible hoist made. Light—500 lb. hoist weighs 215 lbs.; 1000 lb. hoist 250 lbs. Speedy—40 ft. per minute A. C., 33 ft. per minute D. C. Limit stop at top and bottom, adjustable to any point. Suspended wherever a chain or air hoist is placed. Investigate! READING CHAIN & BLOCK CORP., 2110 Adams St., READING, PA. *Manufacturers Reading Multiple Gear Chain Blocks, Trolleys, Reading Traveling Cranes.*



1000 lb. Single Drum Hoist. $250; 500 lb. Type $225.

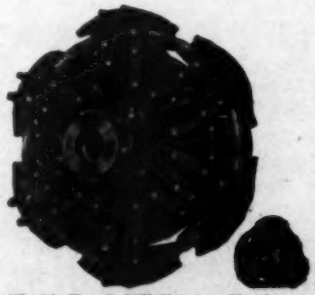
EVEREDY

SINGLE DRUM

Electric Hoists

"HILL CLUTCH"
MILL EQUIPMENT

YEARS OF SERVICE AT FULL EFFICIENCY—NOT THE FIRST COST, ARE THE TRUE TEST OF FRICTION CLUTCH ECONOMY



"Smith Type" Hill Friction Clutch cut-off couplings (patented)

The "SMITH TYPE" HILL CLUTCH is a safe and practical investment that pays dividends.

When the load is applied, this clutch can be depended upon to *"stand the gaff."*

Designed along correct mechanical lines.

Frictional contact 100% effective.

Lots of reserve power. Built in 20 sizes from 9 to 1300 H.P. at 100 R.P.M.

Install the "Smith Type" Hill clutch for economical operation of prime power units, individual machines, sections of shafts, or group drives.

The Hill Clutch Machine & Foundry Co.

General Office and Works
Cleveland, Ohio

New York Sales Office
Liggett Bldg.

FOR SALE: Slightly Used Beaters

1—1200 Lb. Iron Tub Beating Engine.
1—2000 Lb. Allen Breaker Beater (nearly new).
Will sell the above "as is" or factory rebuilt.
ALSO
3— 800 Lb. Beating Engines, rebuilt with new wooden tubs.
THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y.

Wanted Immediately

One Second-hand 50″ to 62″ slitter and rewinder. State full particulars.

JOHN A. MANNING PAPER CO., Inc.
TROY, N. Y.

WANTED

Designing draftsman with technical training wanted. Should have originality and extensive experience in paper mill problems, operation and structural design. This position offers an exceptional opportunity for the right man to connect with one of the largest and most progressive paper mills in Canada. In reply, state age, education, experience and salary; also date can start work. Address Box 75, The Paper Industry.

Paper Machinery For Sale

One FOURDRINIER TISSUE PAPER MACHINE—takes wire 126″.
Two presses; nine dryers 48″ x 118″; calender, reel, drum winder. Self-contained Marshal drive.
One PUSEY & JONES FOURDRINIER PART—takes wire 126″ x 60 ft. New Century shake; Millspaugh suction roll and Connersville pumps.
Moore & White four drum winder 118″; 120″; 96″; 72″.
One 86″ stack machine calenders; bottom roll 24″ diameter; three 12″; top roll, 22″.
One 82″ stack machine calenders; nine rolls.
Two 72″ stack machine calenders.
Four 66″ nine roll Holyoke super calenders.
Seventeen dryers 36″ x 84″.
Twenty-one dryers 36″ x 66″.
One 84″ Moore & White late type sheet cutter.
Four 60″ Hamblet sheet cutters with Moore & White layboys.
Four Jones beaters 66″ x 57″.
Two Noble & Wood Monarch Jordans.
One Noble & Wood Pony Monarch Jordan.
One Jones Wagg Majestic Jordan.

For sale by

FRANK H. DAVIS CO.

175 Richdale Ave. Cambridge, Mass.

FOR SALE
Complete 50 Ton Pulp Mill
Immediate Shipment

Power Department
B. & W. Boilers
500 K. W. Non-condensing Turbo set
Pumps and small parts.

Wood Room
American Barking Drum
2—84″ Carthage Chippers
Chip Conveyers.

Digester Department
4—8x27 ft. welded digesters
(or 2—9¾x47 welded digesters)
1—Diffusion battery—9 vessels closed type
(Alternate—wash and caustic tanks)
Bleach liquor tanks, pumps, motor, etc.

Recovery Department
2—9x36 ft. incinerators
3—Waste heat boilers or rotary evaporators
Caustic liquor and Meltina tanks
Smelter Furnaces—Multiple effect evaporator.

PRICE: Including Structural Steel, Miscellaneous Piping, Pumps, Motors, Belting, etc. . $130,000

WRITE WIRE TELEPHONE

Technical Economist Corporation

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Telephone Whitehall 5243 Cable Herenco

POWELL VALVES
"Pilot" Gate Valves

Fig. 468 T

Write for descriptive Circular

All iron or iron body with steam bronze trimmings. Simple in construction.

Working Pressure up to 125 lbs.

Economical and Reliable

Avoid disappointment in Valve Service by specifying POWELL VALVES

The Wm. Powell Co.
214 Draper St.
Cincinnati, Ohio

are idle and the men are on short time. About the same amount of orders are being received by the woodfree mills, but foreign competition is still severe. Imports are practically the same as last year, while exports have advanced slightly.

Market selling prices of all papers are steady and raw material markets are in the same condition, there being an absence of demand. Pulp mills in Scandinavia are looking forward to better prices later in the year, but they are at present provided with forward business covering the better part of the year's requirements.

The esparto mills and coated paper mills are now in a satisfactory position, and a steadily improving demand for coated art paper on esparto body stock is making itself felt.

Daily Telegraph Paper-Making Film

The Daily Telegraph film, "Behind the Scenes of a Great Newspaper," was shown recently for a whole week at the Tivoli, one of the newest and largest cinemas in London. The film, which is of considerable interest to all newspaper readers, depicts the production of a modern newspaper in all its stages, from the first process of paper manufacture to the final printing and distribution.

New Catalogs, Booklets, Etc.

American Engineering Standards Committee, 29 W. 39th St., New York City.—The 1925 Year Book describes the year's work of this committee, and lists among those projects which, on January 31, 1925, had an official status before the committee, the Safety Code for Paper and Pulp Mills. A draft proposal of this code is now under consideration.

Combustion Engineering Corporation, 43 Broad Street, New York City.—A new catalog entitled, "C-E Heater" illustrates and describes the primary use of the C-E Air Heater, its advantages, performance and applications. Copies may be had upon request.

Detroit Stoker Company, Detroit, Mich.—Bulletin No. 1018 is an attractive 32-page booklet describing the application of Detroit underfeed stokers of the single retort type. It also contains a number of fuel bed cross sections showing conditions of the fire with respect to air distribution and movement toward the dumps.

The Hydraulic Society, 90 West Street, New York City.—The third edition of "Standards of the Hydraulic Society" has been recently issued giving valuable data on the subjects of pumps. Copies may be obtained upon application to the secretary of the society.

Link-Belt Company, 910 So. Michigan Ave., Chicago—This company has just issued a new 68-page book describing new methods for handling coal and ashes in boiler houses. It is beautifully illustrated, showing installations of the Peck Carrier.

The Lunkenheimer Co., Cincinnati, Ohio.—This company has brought out a new line of iron body, bronze mounted gate valves. The numerous and distinctive features of this new valve are illustrated and described in an attractive brochure which can be had upon application.

National Safety Council, 168 No. Michigan Ave., Chicago.—"Maintaining Interest in Safety" is the subject of a pamphlet recently issued by the Council which points out that to start an accident campaign is one task but to maintain it in spirit requires enthusiastic effort.

Roeper Crane & Hoist Works, Reading, Pa.—Circular Form No. 118 describes their Type "R" hoists which are built for hook suspension, rigid connection to overhead support, or equipped with plain or geared trolleys.

C. J. Tagliabue Mfg. Co., 18 Thirty-third St., New York City.—A new and revised edition of this company's catalog of automatic controllers for temperature, pressure, humidity, liquid level, condensation and other factors which are important to the success of industrial processes, has been recently issued.

T. B. Wood's Sons Co., Chambersburg, Pa.—Bulletin No. 268 announces, illustrates and describes a new device which has just been brought out by this company, known as the "U. G." Automatic Belt Contactor. Copies can be had upon application.

USING steam at 200 pounds pressure when only 100 pounds are needed for any auxiliary use is like paying a man $2.00 an hour when he only asks for $1.00. It's paying double the price for the same result. The Davis Pressure Regulator reduces steam pressure and makes costs what they should be.

G. M. DAVIS REGULATOR CO.
414 Milwaukee Ave.
Chicago, Ill.

1875—Valve makers for fifty years—1925

DAVIS VALVE SPECIALTIES
STEAM SAVERS SINCE 1875

Davis Pressure Regulator

Piston type with counterweighted lever control. Pressure is balanced by weight. Action is visible, and may be hand-tested by moving lever. No springs or toggles — no diaphragm to give way.

PI-8B-RTG

In the line to stay

Fig. 106
Screwed, Jenkins Standard Bronze Globe Valve.

A Jenkins Valve, once installed, is in the line to stay. You can feel confident of its year-after-year performance, free from costly repairs and replacements.

Should the renewal of a disc be necessary, the valve need not be removed from the line. And if a stuffing box should need repacking, this operation can be easily performed with the valve in the line *under pressure.*

Jenkins Valves and parts obtainable through supply houses everywhere.

JENKINS BROS.
80 White Street.....New York, N. Y.
524 Atlantic Ave.....Boston, Mass.
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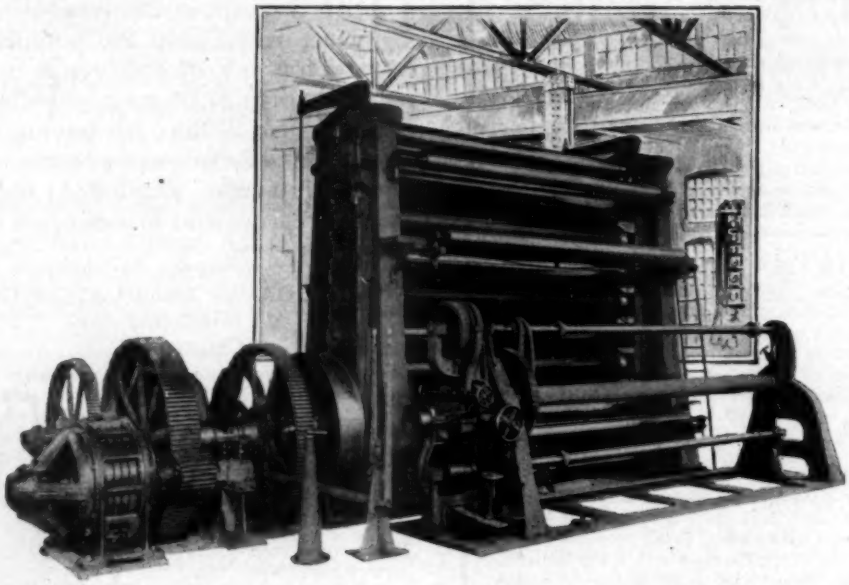
646 Washington Blvd.....Chicago, Ill.
JENKINS BROS., Limited
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864



These massive, slow moving gears

—need a clinging lubricant that forms and holds the "film of protection"

IN your mill, there are many gears that need lubrication. Most of them are ponderous and slow-moving; and the *quality* of the lubricant is more important than the *quantity*.

It is obvious that the lubricant you use must not channel or fly off, but cling tenaciously to the gear teeth and form a tough, sturdy "film of protection" at all times.

The "film of protection"

For gears, opened and enclosed, the technologists of the Tide Water Engineering Bureau have perfected two lubricants—Tycol Gear Compound and Tycol Gear Coating Soft—that give the perfect "film of protection". Both are semi-fibrous, high quality greases. In use, they cling tenaciously to the gear teeth—but do not channel.

They are also extremely economical—a little goes a long way. Even after long periods of service, their lubricating value remains unimpaired, and exposure to air will not cause oxidation.

One of our Staff Engineers will be glad to call and show you samples of Tycol Gear Compound and Tycol Gear Coating Soft—and also tell you about the many other lubricants comprising the Tide Water Power Group.

The FILM of PROTECTION

—for paper mill machinery

In their application to each phase of paper mill lubrication, the lubricants comprising the Tide Water Power Group form the "film of protection," *thin as tissue, smooth as silk, tough as steel.* The application of the Tide Water Power Group to your machinery will give you economical lubrication—maximum power, uninterrupted operation and increased production.

The Tide Water Power Group

TYCOL GEAR COMPOUND
TYCOL LUBRICANT No. 1
TYCOL YARN GREASE
TYCOL H. T. GREASE
TYCOL MEDIUM FIBRE GREASE
TYCOL GEAR COATING SOFT
GRENOL STEAM CYLINDER OILS
DYNOL ENGINE AND TURBINE OILS
TYCOL LUBRICATING GREASES
CLAROL MACHINERY OILS

TIDE WATER LUBRICANTS

TIDE WATER OIL SALES CORPORATION

ELEVEN BROADWAY NEW YORK

Technical Developments in the Paper Industry

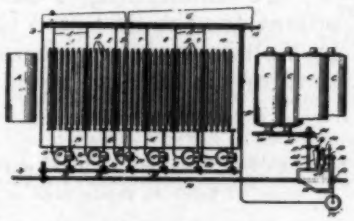
Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Speed Control on Paper Making Machines

THE illustration shows a part of the dry section of the paper making machine and the means that are employed for regulating the speed of the drying apparatus.

There is provided in this part of the machine a means for propelling the paper web, as well as for drying the paper web. The driving device which is employed in propelling the paper web comprises a system of differential gearing which serves to change the speed of the web travel. There are also provided two cone pulleys which are arranged on opposite sides of the machine. One of these pulleys is driven by the driven gear of the aforementioned differential gearing. There is also arranged a member which can be shifted and which is used for transmitting the motion from the aforementioned pulley to the other pulley. The second pulley is connected with the differential gearing which is employed for changing the speed of the driven gear. The shifting of the pulley is accomplished by a device which is controlled by the tension in the paper web. Thus there is obtained automatic regulation of the paper web travel. United States Patent, No. 1,543,368.



Fiber Recovery

PAPER mills which have no or a poor system of save-alls must reckon with a loss of from ten to twelve per cent of their production. Various apparatus are used for the purpose recovering fiber values and in the journal, Papir-Journalen, 3, 4, 5 (37, —), 1925, there is a description of a number of experiments that were carried out with a number of different types of save-alls to determine the practical efficiency of these systems.

One thing that must be guarded against is unnecessary dilution of the back waters. Then again, in choosing the particular recovery system that is employed, consideration must be taken of the character of the paper that is being made. The following characteristics must be possessed by a recovery system if good results are to be obtained from its operation.

The recovery device should be so made that it can function properly when certain variation takes place in the flow of water to it. It should be able to take care of an additional flow of water up to a certain degree without becoming overloaded. The water that is run off from the clarifying apparatus should be as clean as possible, so that it may be employed as spray water in the nozzles on the paper making machine. When the better grade of papers are being made, then it is necessary to see that the water does not become contaminated with iron.

In recovering fiber values in the mechanical wood pulp plant, it is not possible to use the settling type of save-all, for the reason that the fibers retain a certain amount of air which makes them float on the surface of the water. Hence a rotating save-all is best suited for this work.

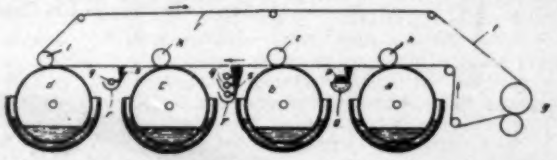
In the sulphite mills under ordinary operating conditions, the waste water is comparatively free from fiber values, and furthermore, the fibers that are lost are of little value. With a pulp concentration of one to three hundred before it reaches the concentrating cylinder (the dehydrating cylinder) and of one to one hundred after dehydration, the loss in production is approximately 38 to 42 milligrams per liter or about 0.6 per cent figured on the total production of paper in the mill. The fiber loss under the wire of the dehydrating machine is on the average between 25 and 40 milligrams per liter or 0.36 per cent of the total paper production of the plant. When the waste water from the dehydrating cylinder is circulated over a sand filter, the losses in this part of the process may readily be reduced to as low as 0.22 per cent.

Increasing Absorptivity of Cellulose

THE process which is patented in French Patent, No. 585,451, is concerned with augmenting the absorptive capacity of substances such as cellulose or wood pulp for coloring matters and other materials. Cellulose possesses the power to absorb liquids and increase in volume thereby. This absorptive capacity can be increased by first treating the fibers with low boiling organic solvents, such as ether and carbon tetrachloride.

Manufacture of Paper with Surface Design

THE new manufacturing process which pertains to the manufacture of marbled paper or paper with a surface design, which paper has been made from several paper webs formed on the cylinder machine, consists essentially in the fact that colors and chemicals are allowed to exert their



action on the paper web between the individual paper making cylinders. The surface of the paper is changed and the next web is built up right on the one that preceded.

The machine that is employed for this purpose is seen in the accompanying illustration, and in this case, it is composed of four cylinder machines, (a), (b), (c) and (d). These cylinders are provided in the usual manner with the couch rolls (h), (i), (j) and (k). The paper webs are taken up by the felt (f). All the four webs are thus taken off the couch rolls by the felt (f) and united to form a single paper web, which is carried to the wet press (g).

A color trough (o) is arranged between the cylinders (a) and (b). A brush roll dips into this trough, as is seen from the figure, and in this manner the color is finely distributed over the surface of the paper web.

Spray tubes (q) are arranged between the cylinders (b) and (c), and (c) and (d). These tubes are provided with a number of nozzles or openings and the color liquor is forced through them. In order to obtain uniform distribution of the coloring matter, the color is not sprayed directly onto the paper web but is first made to strike a baffle plate (s), which is formed by lengthening one of the walls of the trough (r), so that the excess color falls back into the trough and is used over again. The baffle plate throws the liquid in the atomized condition against the paper web that is moving past the point with the result that a perfectly uniform coating of color is formed over it.

Between the cylinders (c) and (d) there is only a single spray tube (q), while between the cylinders (b) and (c) three separate tubes are arranged. It is advisable to provide only part of the length of the tube with spray nozzles, so that it is possible to spray three different color solutions through

Automatic Protection Against Human Error *in the* Measurement of Materials

MUCH of the large annual loss to industry in the measurement of materials must be charged to unintentional human error.

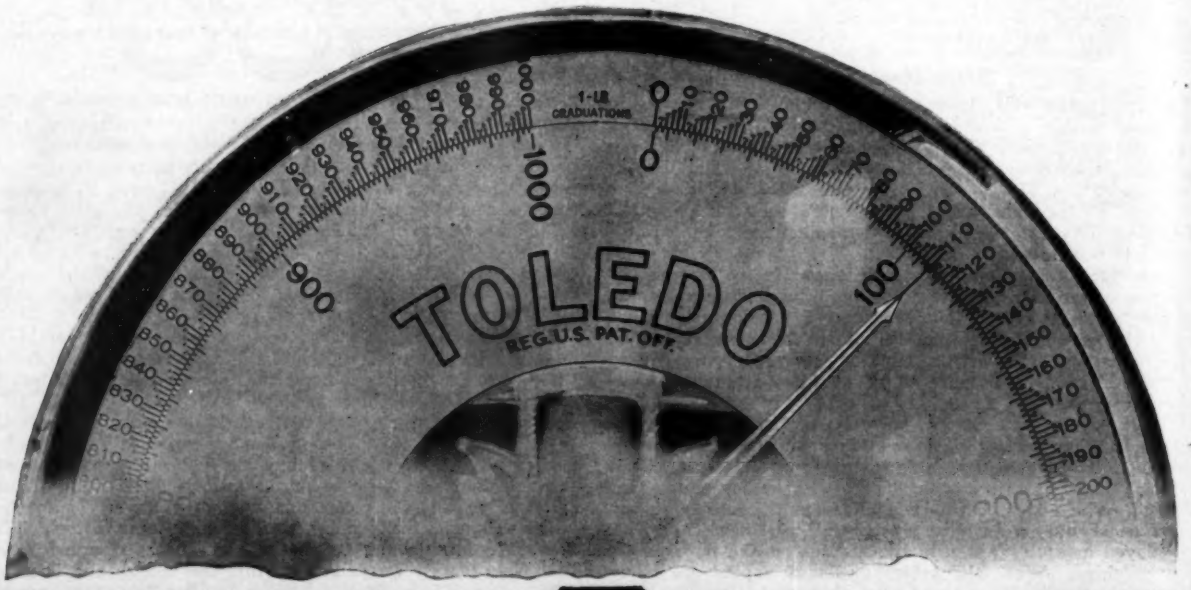
Expert clerical help is not always available to operate scales, and even the most conscientious and careful operator often makes mistakes when hanging weights on a counterpoise, moving poises along a beam, reading faint weight graduations crowded on a line only 12 to 20 inches long, and making hurried mental computations.

These sources of human error are removed by Toledo Scales, and the measurement of materials by weight or count is simplified to an automatic mechanical operation. The operator puts on the load and reads the result on a great dial from 5 to 7 feet in circumference, in figures so plain that it is easier to be right than wrong.

To modernize *YOUR* measurement operations the first step is an investigation by Toledo Scale engineers. This costs you nothing; it may save you much.

Toledo Scales are used for automatic weighing, computing, counting, mailing, checking, packing, shipping and special purposes in stores, offices, shipping rooms, factories, mills and warehouses. Scales to weigh everything from an ounce of spice to thirty tons of steel.

Toledo Scale Company, Toledo, Ohio
Canadian Toledo Scale Co., Limited, Windsor, Ont.
Manufacturers of Automatic Scales for Every Purpose
Service Stations in 106 Cities in the United States and Canada



TOLEDO SCALES

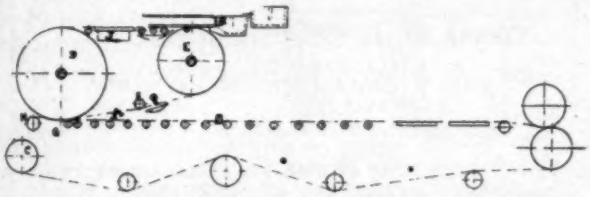
NO SPRINGS HONEST WEIGHT

the same. The arrangement of the spray nozzles in the individual tubes can be fixed in any suitable manner that appears to be desirable, so that streaks of color may be formed in various ways on the paper web. German Patent, No. 409,-233.

Manufacture of High Grade Imitation Paper on Paper Machine

OVER the Fourdrinier wire in a paper machine, there is arranged a second wire (A) which runs in the opposite direction, passing over the rolls (D) and (E) and which is regulated by the roll (F). The wire (A) with the cylinders that belong to it is connected with the Fourdrinier wire (B) in such a manner that at the point (G) the shaking of the two wires (A) and (B) is in unison.

The stock is fed from the stuff chest (K) on to the upper wire (B) in a direction opposite to that in which the wire



(B) is moving. The wire (A) takes up the stock, which is dehydrated and then felted together to form a paper web by means of the constant shaking and then this web is couched on the Fourdrinier wire (B) which is pressed against the roll (D) by means of the roll (H). The dehydration of the paper web on the wire (A) is regulated by means of a suction device (J).

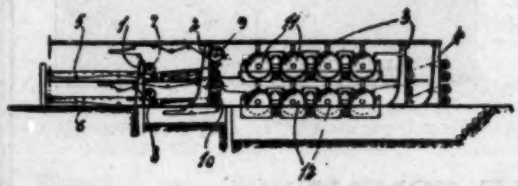
In order to produce a watermark on the paper web, there are arranged on the wire (A) depressions or elevations in the wire to form a design. The wire (A), which produces the watermark, is conveniently made of two elastic wires, one of which carries the watermarking design and the other serves to support and strengthen the former.

The fluid stock is fed to the wire (A) from the stuff chest (K), whereat the water runs off through the wire and the fibers have plenty of time to arrange themselves in thicker and thinner layers, according to the low and high spots on the watermark design on the wire. There is hence no hand labor involved in the process of making the paper, as the shaking of the wire (A) is analogous to that which takes place when the hand frame is shaken by hand.

This machine is therefore very well suited for the manufacture of paper used in making currency, bank notes, stock certificates, etc., in which there is desired a very high strength and a uniform tearing length. In the place of the Fourdrinier wire, it is also possible to employ a cylinder wire. German Patent, No. 409,586.

Paper Making Machine

PAPER making machines of large width are operated under difficult conditions. This is particularly true when it is desired to obtain a fine grade of thin paper. Hence, if it is desired to obtain satisfactory results, it is consequently frequently necessary to limit the width of the machine to



from one and one half to two meters. Then again, these narrow machines are operated at greater expense than the wider machines for the simple reason that the same number of men are required to tend the machine as the one of larger width while the paper production is greater on the latter than on the former.

The invention which is patented is French Patent, No. 587,-115, yields two paper webs at one and the same time, and hence carries in duplicate all the various parts, such as wires, presses, etc., that are employed in the actual formation of the paper webs. In this manner, it is also possible to decrease the labor required for a given production of paper, for the wires and presses placed one over the other can be tended by one and the same laborer. This applies as well to the drying part of the machine.

In addition to economy in operation, the new machine may be made at a considerably lower cost than what is generally entailed in paper machine construction. For in this case it is possible to use a single framework for the various parts of the machine. On the other hand, the machine that is described in this invention does not occupy as much space as the wide machines which give the same production of paper. The loss of paper is less and there is not so much replacement of the paper felts and the wires as well as the rubber covering of the rolls.

The machine is shown in the accompanying illustration. The figures (1), (2), (3) and (4) represent the couch roll mountings, the dandy rolls mountings, that of drying cylinders and finally that of the winding rolls, the two metallic wires are seen at (5) and (6) and the couch rolls at (7) and (8). The drying cylinders are shown at (11) and (12). The two parts of the machine can be made to operate independently, and two separate motors may be employed for this purpose.

Although the machine, which has been described, is particularly well suited for the manufacture of fine grades of papers, it can also be used in the manufacture of thicker papers and paper board.

Manufacture of Paper and Cardboard

DRY grasses, reed grasses, and cereal grasses, particularly corn straw, may be converted into unbleached paper, cardboard, or the like, which requires neither sizing agents nor fillers. This is accomplished by steaming them, after suitable comminution and preferably after moistening, under such conditions of time and pressure—for example, two to four hours at a pressure of five to six atmospheres—that a proportion of the incrustating materials, and as much as possible of the vegetable glues, remain in the stuff to act respectively as filler and sizing agent in the finished product. The steamed material is disintegrated in, for example, a rag engine, and may at the same time be washed but must not be so severely handled as to nullify the special effects of the steaming treatment. The resulting half-stuff may, if required for the manufacture of white papers, be baled preferably in such a manner that it can be charged directly into a boiler, and subsequently be boiled and bleached in the usual manner. British Patent, No. 216,532.

Influence of Beating on the Properties of Paper

TESTS were made with a bleached wood pulp which had not been sized or loaded. The density of the pulp was six per cent. The paper stock was beaten and samples were then made up into paper sheets. The samples of paper were examined under definite atmospheric conditions, 18 degrees C. and 65 per cent humidity.

The effect of the beating on the following properties of the paper made from the pulp were studied:

1. Resistance to breaking in each direction, and the ratio of the two values.
2. Resistance of the fiber itself to breaking.
3. Adhesion.
4. Elongation in each direction and the ratio of the two values.
5. Resistance to folding in each direction and the ratio of the two values.
6. The feel or handle of the paper.
7. Absorptive capacity of the paper.

The results obtained were as follows:

In the first place, the resistance of the paper to breaking, in its length, attains a maximum and then decreases as the fibers are beaten further. The resistance of the fibers themselves to breaking increases rapidly with the refining of the fibers and then decreases slowly. The average elongation or stretch also passes through a maximum point. It decreases very rapidly as the beating is prolonged. The average re-

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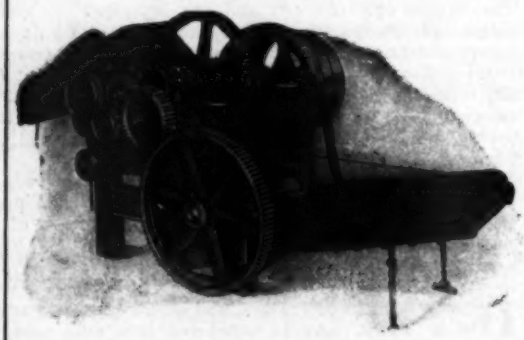
are evident from the fact that most of the first of these machines, built 25 to 30 years ago, are still doing daily service in paper mills. Of course the Cutters we are now building are much heavier and stronger than these old machines, and have been improved in many ways, but the general principles and form have been retained.



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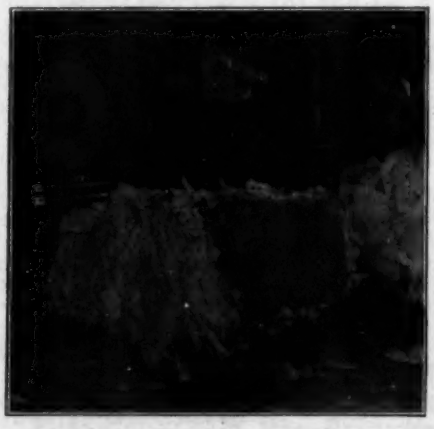

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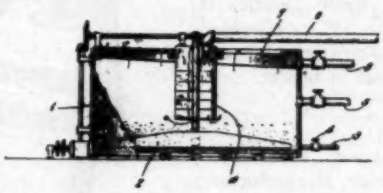
sistance to folding also passes through a maximum point, but this is attained much sooner than in the former case. As far as ratios of the resistance values in the two directions of testing are concerned, it was found that they remained practically constant in all cases.

The handle or feel of the paper was expressed by the thickness in millimeters which the paper should have if it weighs one hundred grams per square meter. This figure was found to decrease with beating.

In the original article, a series of curves are given illustrating these effects of beating on the properties of paper. Le Papier, 1925, pages 551-5.

Paper Making with White Water Recovery

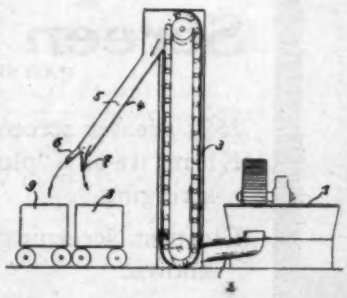
IN UNITED STATES Patent, No. 1,543,663, there is described a process for the manufacture of paper which consists in the reclaiming for reuse the solid particles that are retained in the white water. The coagulation of these particles is accomplished in the apparatus which is shown in the accompanying illustration. The process consists in adding reagent to the white water which will assist in the sedimentation of the fibers by coagulation. The fibers are then permitted to settle to the bottom of the sedimentation tank, while the liquid in the tank is gently agitated by means of a slowly traveling agitator which moves near the bottom of the tank. The thickened pulp is then discharged from the lower portion of the tank and the surplus liquid from a number of openings which are located at higher levels.



Beating Up Old Paper

THE paper stock that is prepared in the kollergang, namely, that which is manufactured from old paper, has, as a general rule, to be shoveled out of the tub of the kollergang, then put through a screening device, in order to remove the impurities and undisintegrated pieces of paper and thereafter further treated and made into a paper product. Such a process consumes a great deal of time and is costly in labor.

In the new process, which is patented in German Patent, No. 413,215, and the apparatus of which is seen in the accompanying illustration, the operations are carried out in a mechanical manner, the screening taking place simultaneously with the removal of the stock from the kollergang into the wagons, in which it is carried to the papermaking machines. The entire process takes place in an automatic manner.



In the figure, the kollergang is seen at (1). A runoff chute is seen at (2), and the material in this chute comes in contact with a bucket elevating device (3). Thus the material is raised by the elevator and then allowed to flow into a chute (4). In this chute there is arranged a screen (5), which is placed at an angle, so that the pulp that has gone through the screen emerges at the end of the chute through the opening (7), and that which did not go through falls out through the opening (6). The material is thus screened and the wagons filled with two kinds of pulp. Thus the wagon (8) contains the screened pulp, while the wagon (9) contains the screenings.

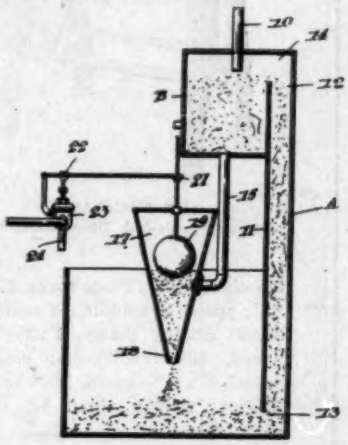
Physical Properties of Sulphite Celluose Fiber Suspension

AN INVESTIGATION was made of several properties of the mixture of sulphite pulp fibers and water with the idea of relating these properties to the papermaking process so as to afford a control of the operation. Thus, for example, there were investigated the density and the air content of the suspension of sulphite fibers in water and the relationship between these two properties of the suspension and the concentration of the fiber-water mixture. Mathematical relationships are developed and formulas are worked out which define the relation between these properties. An investigation was also made of the capacity of sulphite fiber suspensions for allowing light to filter through them. Wochenblatt fuer Papierfabrikation, No. 24A, 1925, pages 36 to 42.

Stock Regulator for Paper Making Machine

THE illustration shows a stock regulator for a papermaking machine and is patented in United States Patent, No. 1,544,705.

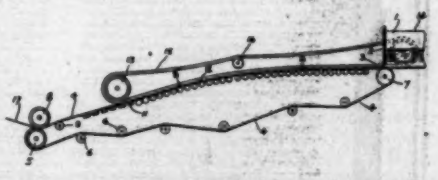
The apparatus consists of a pulp box, which is seen at (13). This pulp box is connected by the arrangement (11) with a pulp containing compartment (14). The overflow of pulp from the compartment (14) is thus allowed to flow down through (11) into the box (13). The compartment (14) is connected with the hopper device (17) through the pipe (15). The hopper is designed to discharge the pulp into the lower compartment (13) through the opening (18). A float (19) is provided in the hopper, and this float is connected by means of a suitable leverage system to the valve (23), which is in turn connected with the supply pump. Thus when the float (19) is raised, water is delivered automatically by the pump to thin the pulp and facilitate the flow of the same into the lower compartment.



Paper Making Machine

THE illustration shows a type of papermaking machine which is patented in United States Patent, No. 1,544,904.

The papermaking machine is provided with a conveyor onto which the paper stock is discharged in a longitudinal direction. The machine comprises a table with a substantially horizontal upper portion, a sloping lower portion and an intermediate portion defining a parabolic curve.



Starch Sizing of Paper

AN INVESTIGATION was made to determine the advantages that are to be gained, if any, from the use of starch in the sizing of paper. The tests were carried out with potato, wheat and rice starches, which were used both in the raw condition as well as after they had been broken down with water and made to swell up. Then again, mixtures of the starches were employed, and a starch broken down with the aid of alkali was employed as well. Finally, a soluble starch obtained was potato starch and this was used. The stock that was used in the sizing experiment consisted of bleached rag stock, coarsely beaten, and also highly bleached chemical pulp, which has been beaten until a slight degree of slowness was obtained.

The conclusion that may be drawn from the experiments is that in all cases where starch was employed as a sizing agent, the strength of the paper was increased to a considerable degree over that of paper in which starch was not present. The results also indicated that when the starch is broken down, the strength of the paper is increased. Furthermore,

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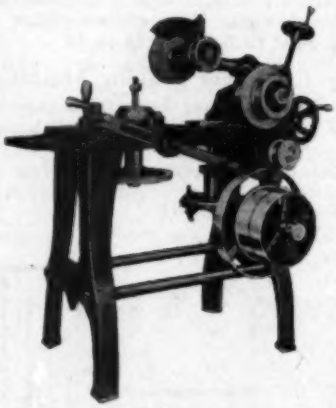

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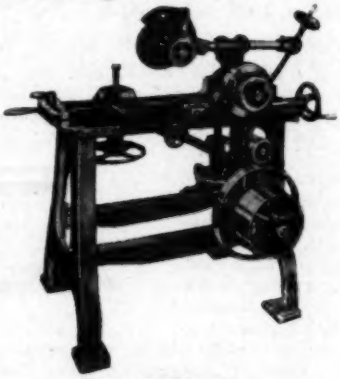

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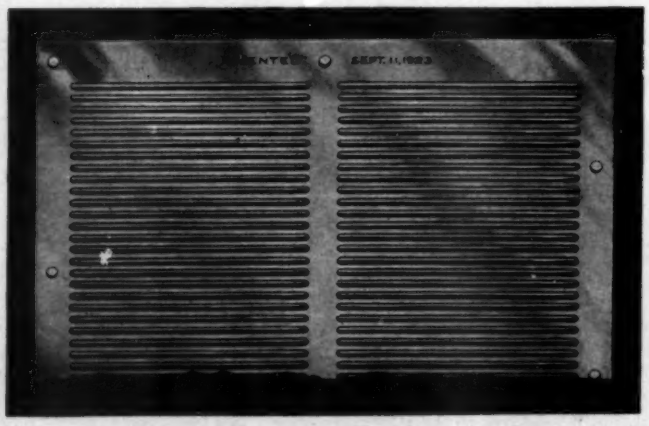

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the different varieties of paper stock acted differently when sized with starch as far as the strength of the paper is concerned. Thus, for example, in the case of the coarsely beaten rag starch, the strength enhancing action of starch sizing is not so marked as in the case of slightly slowly beaten sulphite pulp, which, as is well known, can be very readily sized with rosin. Both the alkali and the soluble starch gave very good results. The specific increase in the tearing length of the paper when 1 per cent of starch is present in the paper is also found to be considerable.

Another interesting point is the effect of the starch sizing on the folding test carried out with the paper. In general, the folding test gives better results when starch is used, with the exception of sulphite pulp, in which case the paper gives a poorer folding test. This must be due to the stiffening action of the starch, which gives the paper the desirable feel. It is concluded, therefore, that the sizing action of starch is quite different in the case of the slow sulphite pulp than it is in the case of the rag stock.

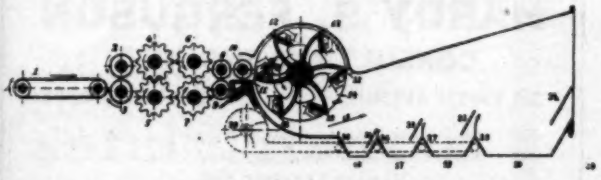
The use of starch in addition to rosin for the sizing of paper possesses considerable advantages. Both the strength of the paper is materially increased and its feel and appearance are enhanced. A part of the rosin may therefore be replaced by the starch, but it must be remembered that with starch alone it is not possible to obtain a paper that will hold ink.

In the original article, various data tabulations are given on the use of starch in conjunction with rosin. Additional investigations were made on the use of starch in conjunction with china clay, as well as with water glass. It was found that considerable of china clay and other fillers could be incorporated with paper that had been sized with starch without destroying any of the good qualities that are gained by the use of starch alone.

For further details on this interesting article, see Wochenblatt fuer Papierfabrikation, No. 24A, 1925, pages 89-93.

Paper from Straw Stock

IN THE processes which are commonly used in the manufacture of pulp from straw stock, such as wheat straw, corn straw and the like, there is one disadvantage that causes trouble, and that is the properties of the different kinds of



straw stock are not sufficiently alike, so that it is possible to manufacture cheap grades of paper from straw or from pulp which is almost completely made from straw stock. The new process which is carried out in the apparatus, which is patented in German Patent, No. 413,318, and which is shown in the accompanying illustration, avoids this difficulty.

In this apparatus the paper stock is given a combined chemical and mechanical treatment, with the result that a combined saving is effected in time, labor and materials used for digestion.

The stock first comes on the conveyor (1) and from there it is fed to a pair of pressure rolls (2) and (3), whose surface is provided with small cone-shaped projections. Then the stock passes between the pair of disintegrating rolls (4) and (5), which are made in such a manner that their corrugated surfaces mesh with one another just like a pair of gears. The next pair of disintegrating rolls (6) and (7) have ribbed surfaces, which come together instead of meshing like gears, as may be seen from the figure. By this time the stock has been pretty thoroughly disintegrated in the length, and it then passes between the pair of rolls (8) and (9) and finally to the carrier roll (10). This roll brings the stock to the knives (11), which are in a fixed position, and finally into the drum (14), in which there are found a number of rotating knives (12). In this apparatus the stock is thoroughly chopped up, so that when it emerges from the drum it is well disintegrated and ready for digestion. The stock in this shape is actually thrown out of the drum by centrifugal force. It falls to the bottom of the settling chamber and separates into the compartments (16 to 20), according to its specific gravity. A number of baffles are also provided, shown at (21 to 24), for the purpose of aiding in the separation of the ground stock. The blower (29) creates a suction in the apparatus which helps in the separation of the stock into heavy and light particles. The suction is applied under the compartments (16 to 20).

In this manner the stock is properly prepared for further treatment with chemical reagents. As has been mentioned, there are considerable advantages connected with this process. One particular one is the avoidance of the dead beating of the paper stock, of which there is always danger in the endeavor to produce a high grade pulp by beating from low grade raw materials.

Direct Heating of Digesters

THERE are two ways in which the digestion liquor is heated in digesters. In the first place, the liquor may come in direct contact with the steam, and, in the second place, the heat in the steam is transmitted to the liquor, but the latter does not come in contact with the condensate.

Direct heating has been carried out up to the present time only by allowing streams of steam to come in contact with the liquor, which results in a loud noise when the two fluids come together, and also in a liberation of gases as well as violent agitation of the liquor in the digester.

The apparatus, which is shown in the accompanying illustration and which is patented in German Patent, No. 413,269, is one in which the liquor is heated directly with steam, but in which all the harmful effects which result usually from such operation are avoided. The liquor is allowed to circulate so that it enters a certain space in the digester in the form of drops, sprays or sheets of liquor, and thus comes into contact with the steam that is introduced into this chamber. Violent shock of the two fluids is thus avoided and condensation takes place quietly.

The figure shows how this is done. A is a sulphite digester, which is provided with a screen bottom B. The digester is filled with chips and liquor up to the lime (a-b). The liquor is circulated by means of the pump (C), being taken out of the digester through the pipe (c) and in the usual manner lifted through (d) and finally sprayed into the top of the digester through the openings in the pipe (e). Steam enters the digester at the same point through the pipe (g).

Titration of Sulphate Liquors

EXPERIMENTS were made with solutions that contain known amounts of sodium hydroxide, sodium carbonate, sulphite, silicate, sulphide, thiosulphate and sulphate. The value that it was desired to determine was the total alkali, and the investigation was made for the purpose of finding out whether the method used was correct. It was determined that when the total alkali was determined by titration, with the aid of a normal solution of hydrochloric acid, using methyl orange as an indicator, correct results are obtained. On the other hand, the available alkali can be determined by a similar titration after the addition of barium chloride for the purpose of precipitating the insoluble sulphate, etc. The test is made on the solution that is obtained after filtration. The iodine titration of the mixture is, however, greater than the sum of the titrates of the components.

For further details the reader is referred to Der Papierfabrikant, 1925, pages 277-9.

Paper Half Stock

THE raw material that is employed in the process for making paper half stock consists of flax straw or the like. The stock is first mechanically cleaned, which removes only a part of the impurities that are contained in it. It is then further cleaned and digested by being subjected to the action of a liquid which is obtained from the introduction of an excess of sodium bicarbonate into a sufficiently concentrated solution of calcium hypochlorite. United States Patent, No. 1,531,319.

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Use of Decayed Wood for Bleached Chemical Pulp

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Burning of Wood Refuse
Moisture Meter and Its Use in Water Removal
Ruths' Steam Accumulator
Steam Prime Movers for Paper Mills
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Notes on China Clay
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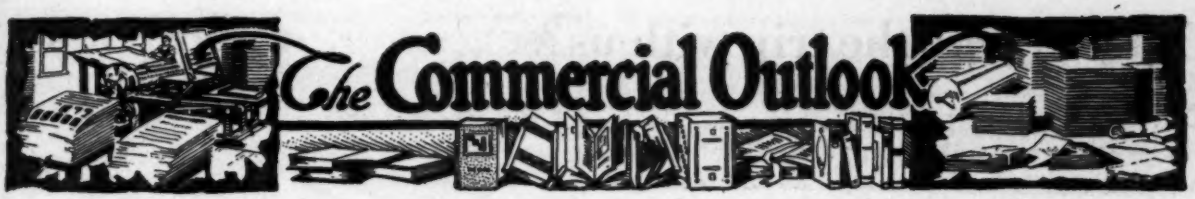
Standard Method for Testing Rags
Testing Aniline Dyes
Tendick's Rosin Size Color Test

Write to THE PAPER INDUSTRY, 356 Monadnock Bldg., Chicago, Ill.



New York, August 1, 1925.

IT IS hardly to be expected that the paper market should show any exceptional activity at just this period of the year. Midsummer invariably is accompanied by a restricted demand for paper of nearly all kinds, and this summer is no different in this respect from previous years. Consumers, converters and other buyers of paper have the vacation fever in their systems and are not pushing business as they do at other seasons of the year; moreover, quietness to a more or lesser degree obtains in most consuming industries, with the result less paper is needed and therefore less is bought.

However, this much can be said without fear of contradiction in many, if any, sources—business in paper is of at least as large volume as is ordinarily the case in midsummer. In fact there is scarcely any doubt that buying of most kinds of paper is larger than in former years at this time. The cautious purchasing of consumers thus far this year is keeping most of them in evidence as buyers nearly all the time, so that a comparatively good demand is developing day by day. Few large users of paper have stocks of any consequence on hand, enabling them to refrain from ordering additional supplies as requirements arise; in almost every case it is necessary for buyers to keep in the market right along covering their needs.

Reports tell of a majority of mills maintaining a fair rate of production. There has been, of course, some reduction in output since the summer set in; this was to be expected, and the probabilities are mills have cut down operations to a smaller degree than ordinarily is the case during the hot weather months. Newsprint mills are producing on a fairly large scale, and so are fine paper plants. Roofing paper manufacturers are running their mills on a moderately active basis, and board producers have been obliged to speed up output.

The outlook is most promising. There seems every reason to believe the paper industry will enjoy pronounced activity in the coming fall and early winter. Consumers are carrying unusually small stocks of paper of every kind. This means that they will have to purchase in full volume as their needs develop, and prospects seem very favorable for excellent business in all lines during the remainder of the year once the summer is over. The mere fact that sentiment regarding the future is so confident and optimism is running so high among business men seems to insure good business, because it cannot be denied psychology plays a big part in business, and if sentiment is so overwhelmingly bullish this will go a good way toward creating active business.

The last statistical review issued by the Department of Commerce in Washington shows that the board industry is getting back on both feet after passing through a very dull period in the spring and early summer. Production of board in the United States in June scored a big gain as compared with the preceding month. A total of 190,310 tons of board of all kinds was produced by domestic mills during June, contrasted with 163,956 tons in May, and constituting the largest single month's output of board since last January. Board mills of the country operated at 96.5 per cent of their capacity in June, against 87.1 per cent in May. Orders received during the month called for 191,482 tons of board, contrasted with 174,766 tons in May, while unfilled orders held by mills at the end of June amounted to 90,920 tons, compared with 83,095 tons at the end of May. Shipments of board from mills in June aggregated 183,657 tons, showing a big gain from the 168,171 tons shipped out during May, while mill stocks of board at the end of June totaled 59,947 tons, against 53,254 tons at the end of the preceding month.

Production of paper in the U. S. during June showed a decline as compared with the preceding month, according to the monthly statistical review of the industry, compiled by the American Paper and Pulp Association from reports of identical mills. The total output of paper of all kinds in June was 467,763 tons, against 486,690 tons in May, 489,336 tons in April, 487,372 tons in March, 448,080 tons in February, and 487,536 tons in January. Mill stocks of paper increased somewhat during June, totaling 258,577 net tons at the end of that month, compared with 247,943 tons at the end of May. Shipments from mills in June amounted to 454,638 tons, against 463,777 tons during the preceding month.

Demand for newsprint in the open market has subsided to some extent. Publishers in a majority of cases appear to be getting along with contract commitments without having to resort to spot purchases, and manufacturers have felt the falling off of transient demand. However, most mills are operating on a fairly large scale and are shipping out about all the newsprint they produce. Production by U. S. mills in June amounted to 128,430 tons, against 129,026 tons in May, while Canadian mills produced 124,209 tons in June, compared with 130,013 tons in the preceding month. Together the two countries produced 252,639 tons of newsprint in June, contrasted with 259,039 tons in May. For the first six months, 1925, the output of both U. S. and Canadian mills was 1,506,908 tons, contrasted with 1,432,644 tons in the same period last year—showing an appreciable increase, and representing the largest production in the corresponding time on record.

The price tone in newsprint is firm. Other manufacturers have not as yet followed the lead of one of the big Canadian producers in announcing a cut of $5 per ton on 1926 deliveries of standard newsprint on contracts, although the impression prevails they will do so before the end of the current year. The small-tonnage movement of print paper is fair, and demand from transient buyers is at least normal, or slightly better, for this season of the year.

Book papers are fairly active. Contract mills are busy and are well supplied with orders; in fact, it is stated most of them are unable to promise deliveries within four to six weeks. Prices are maintained, and advances are predicted as soon as the market opens up in the fall.

Fine papers are in good demand for this period of the year. Most buying is of the small-lot variety, but in the aggregate manufacturers are securing a sizeable volume of business and are holding to steady quotations.

Wrapping and tissue are in limited demand, as this is the dull season for such grades. However, prices as quoted show little change. Building papers are in good call and tend higher in price, reflecting the advancing position of rag stock.

Board demand has broadened considerably, and reports say the market is livelier than in a long time. Manufacturers are maintaining prices firmly at about $42.50 a ton delivered New York for plain chip and $45 for filled news board.

Insurance for Timberlands

Three of the large insurance companies are now providing insurance policies on standing timber, merchantable or of young growth. In the short period of its operation in the United States, the outstanding liabilities placed against timber tracts amounts to approximately $10,000,000, which is, however, but an insignificant proportion of the vast timber values in this country.

Timberland insurance has long been written in Europe. Norway, Sweden, Denmark and Germany place large coverages on their forests and it has been the experience there that measures of this kind stimulate reforestation.

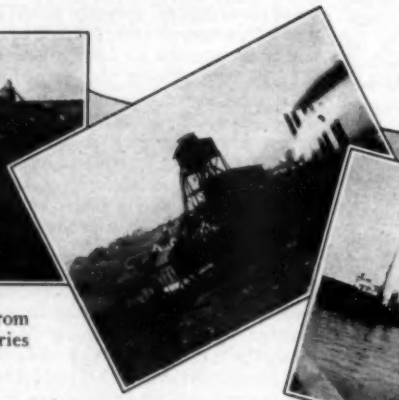
At present only three companies in the United States are writing timberland insurance: the Home Insurance Company, Globe and Rutgers and Automobile Insurance Company of Hartford. The basic rate is $1.25 per $100 for merchantable timber and $2 for timber plantation.

Did you take the trip with us?

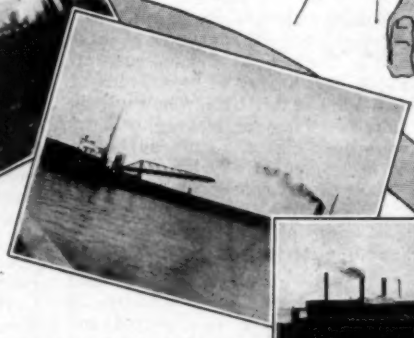
SEVERAL weeks ago we invited you to take a trip with us—in this publication—over the lands of the Wyandot and through the great Michigan Alkali institution. It has been an interesting trip. Here are the points it touched.

[*We have prepared a series of reprints for those who have not followed the story in this publication. Just write us.*]

1. The limestone comes from Michigan-owned quarries at Alpena.



2. The coal comes from Michigan-owned mines in Pennsylvania.



3. And Michigan-owned steamers bring the raw materials to the two great alkali works and their salt wells at Wyandotte.

Can any other manufacturer of alkali match this "independence of outside influences"?

4. Michigan's chemists test every shipment of "Wyandotte Brand."

5. It comes to you in barrels made in Michigan's own cooper shop.

6. —And it bears the "Wyandotte" trade-mark as your protection.

"Distinguished for its high test and uniform quality."

Michigan Alkali Company

Manufacturers of "Wyandotte Brand"

General Sales Dept. **21 East 40th St., New York City**

Works, Wyandotte, Mich.

Soda Ash **Caustic Soda**

Bicarbonate of Soda

Domestic Raw Materials

Papermaking Rags

Current activity in the papermaking rag market is somewhat spotty, according to reports. There is a fair demand for certain grades; in fact, the call from consuming mills in some instances has increased to quite a degree during the last few days, yet it is stated generally that business in the aggregate is small and very characteristic of the midsummer period. The position of the market is one of firmness. Probably not in years have rags for papermaking exhibited so much fundamental market strength at this time of the year, and the mere fact that the market tone is so exceptionally firm at this season seems to foreshadow a lively and advancing situation later in the year when demand from consuming quarters is due to expand.

Dealers in various parts of the country put great stress on the small incoming supplies of rags. It is asserted that the amounts being received from collection sources do not begin to measure up to former years; that there is every proof rags actually are scarce, and that the prices demanded for mixed rags by gatherers are such as to insure a high market for material sorted and packed for mill purposes for some time to come. In fact, it is the contention of dealers that were it not for the heavy influx of rags from Europe there is no saying how high prices might go. The big supplies coming into the country from foreign sources serve to put a check on the uptrend in values and to keep prices on a level, which is regarded in at least trade circles as quite reasonable in view of existing circumstances.

From the point of vantage of the paper manufacturer, the rag situation is not all that could be hoped for—not by any means. At the moment market conditions are not so bad, as there is apparently a plentiful supply of rags to go around and prices are not so very high, but it is the future possibilities of the market which present such an unfavorable aspect. There seems no gainsaying that should demand for papermaking rags develop this fall and winter in as large volume as is usual, prices are going to rise to much higher levels than now obtain. No other reason than that available supplies are limited will cause this. It appears definitely established that collections of rags in the United States last spring fell far short of normal, with the result dealers are not carrying the stocks they have ordinarily at this time in preparation for the pickup in demand later in the year, and also with the result they have been obliged to pay stiff prices for such supplies as have been accumulated. Moreover, the situation abroad is not altogether favorable. Rags have been shipped to America in such record-breaking quantities for some months past that supplies in various parts of Europe are well depleted, and it is going to require time for dealers there to accumulate further stocks. Prices abroad are high—in most instances beyond the relative market levels prevailing here, and European dealers are in a strong enough financial position, having realized big profits in shipments in the past year or so to enable them to adopt an independent attitude and hold for the prices they consider rags are worth.

Probably the feature in the market during the last several weeks has been the improvement in demand for low grades of roofing paper mill quality and a stiffening of prices on this class of rags. No. 1 roofing stock is selling in the East at 2.50 cents a pound f.o.b. New York, and No. 2 packing at 2.20 cents. Higher than these figures have been paid by some mills, while in the Middle West market levels are above those in the East, especially on No. 2 roofing stock, which is reported fetching about 2.35 cents f.o.b. shipping points. Foreign dark colored cottons which are consumed by roofing paper mills have stiffened in price to where importers ask at least 2.35 cents a pound ex dock New York, with most quotations above this level. Foreign linsey garments are quoted around 2.50 cents ex dock New York.

Some grades of new cuttings have eased a little in price, notably fancy shirt cuttings and washables. The former are reported offered to mills at 9.50 cents a pound at shipping points and the latter at 7.50 cents. On the other hand, most kinds of cuttings are holding steady in price and are selling rather freely to paper mills in so far as consumers find need for them. Dealers ask 14.50 cents in most cases f.o.b. shipping points for No. 1 white shirt cuttings, 15 cents for unbleached muslins, 11.75 cents for blue overall cuttings, 14 cents for bleached canton flannels, 11 cents for light silesias, and 13 cents for light flannelettes.

Old white rags are quotably steady at from 7.50 cents upward for No. 1 repacked, and around 5.25 cents for No. 2 repacked whites f.o.b. shipping points. Repacked thirds and blues are quoted 3.75 to 4 cents a pound, and rough packing at 2.60 to 2.80 cents.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	14.00-14.50
White shirt cuttings, No. 2	10.25-10.75
Fancy shirt cuttings	9.50- 9.75
Washables, No. 1	7.50- 7.75
Unbleached muslins	14.50-15.00
White lawns	13.50-14.00
Overall cuttings, blue	11.50-11.75
Black silesias	6.50- 6.75
Light flannelettes	12.50-13.00
Canton flannels, bleached	13.50-14.00
Canton flannels, unbleached	13.25-13.50
Shoe cuttings, bleached	13.00-13.50
Shoe cuttings, unbleached	12.00-12.50
Light silesias	11.00-11.25
O. D. khaki cuttings	7.00- 7.25
Mixed khaki cuttings	6.25- 6.50
Corduroy cuttings	6.00- 6.25
Cottonade cuttings	5.25- 5.50
Linens, No. 1 white, foreign	16.00-17.00
Light prints, foreign	7.75- 8.00
Old Stock—	
Whites, No. 1, repacked	7.50- 8.50
Whites, No. 2, repacked	5.00- 5.50
Whites, house soiled	3.50- 3.75
Whites, street soiled	3.00- 3.25
Lace curtains	6.50- 7.00
Thirds and blues, rough	2.60- 2.80
Thirds and blues, repacked	3.75- 4.00
Black stockings	4.50- 4.75
Cotton canvas, No. 1	5.75- 6.25
White cotton batting	3.75- 4.00
Roofing, No. 1	2.50- 2.65
Roofing, No. 2	2.20- 2.35
Dark colored cottons, foreign	2.35- 2.45
Blue linens, foreign	5.50- 6.00
Gray linens, foreign	6.00- 6.50
White linens, foreign	10.50-11.00
Light prints, extra, foreign	3.75- 4.00

Rope and Bagging

A distinctly firm tone characterizes prices of old bagging. Reports allege that available supplies of this material are light, both in this country and abroad, and that as a result prices at supply sources are so strong it is necessary for

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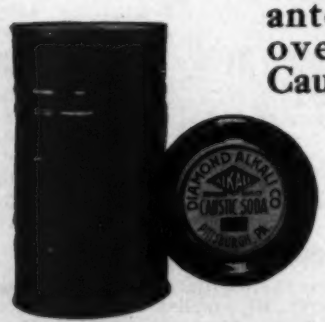

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dealers and importers to secure relatively high figures in sales to paper mills. Quite a run of demand has been noted for roofing bagging recently, and felt paper mills have paid 2 cents per pound f.o.b. shipping points and ex dock New York freely for this stock. In some instances, it is said, this price has been exceeded. No. 1 scrap bagging is bringing around 2.60 cents a pound at dealers' shipping points, and it is reported that well above this price has been paid by paper manufacturers wanting extra quality packing.

A somewhat peculiar situation marks old rope. Demand for domestic old rope is good and paper mills are granting comparatively high prices, whereas the imported article is neglected noticeably and prices of same are well below those prevailing on domestic stock. No. 1 old manila rope of domestic origin is selling to paper mills at 6.75 to 7 cents a pound f.o.b. shipping points, and it is probable some sales have been made a little in excess of 7 cents, yet mills offer only about 6 cents ex dock New York for foreign old manila rope. Strings are steady and in good demand. Mixed strings are quoted by dealers at 1.85 to 2.15 cents a pound at shipping points, depending on the quality of packing.

F.o.b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	3.00-3.25
Gunny, No. 1 foreign	2.90-3.15
Scrap bagging, No. 1	2.50-2.75
Roofing bagging	1.90-2.00
Wool tares, heavy	2.75-3.00
Wool tares, light	2.65-2.85
Manila rope, No. 1 foreign	6.00-6.25
Manila rope, No. 1 domestic	6.75-7.00
Sisal strings	3.00-3.25
Mixed strings	1.85-2.15

Old Paper

Old paper seems to be at last developing a better undertone, with demand from paper and board mills increasing and with prices on the move upward. The market during July was better—at least from a sentimental standpoint—than has been the case all this year, and there are concrete signs that a livelier and firmer condition is arising following a period of some months' duration when dealers complained bitterly of the lack of business and of the lack of profit in such sales as they succeeded in making.

Both in the East and in the West the market is shaping up better at present. There is greater buying interest, especially from box board manufacturers, who appear to be getting more business in their product and therefore are purchasing more raw material. As was predicted, prices have stiffened as the demand improved. Folded newspapers are up to where dealers in the East ask 70 to 75 cents a hundred pounds f.o.b. New York, while No. 1 mixed paper is reported selling at 50 to 60 cents New York. In the Middle West slightly higher prices than these obtain.

Shavings have advanced in price to around 3.70 cents a pound f.o.b. New York for No. 1 hard white, and 2.80 cents New York for No. 1 soft white shavings. Ledger stock is firm at 1.35 to 1.60 cents a pound at shipping points, while No. 1 heavy books are bringing 1.10 cents and higher f.o.b. dealers' points. An exceptionally strong grade is old No. 1 kraft, which is selling at 2.15 cents and more a pound f.o.b. New York.

The following are prices f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.50-3.75
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.70-2.85
Colored shavings	1.10-1.25
Heavy book, No. 1	1.10-1.25
Crumpled book, No. 1	.80- .90
Ledger stock	1.35-1.60
Kraft, No. 1	2.10-2.20
Manilas, No. 1	.70- .85
White blank news	2.00-2.10
Over-issue news, No. 1	.80- .90

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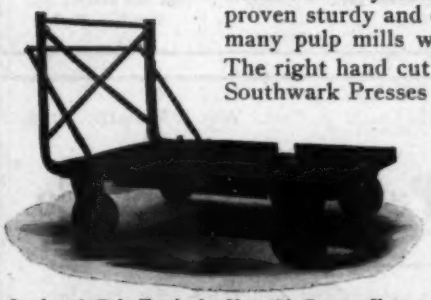

Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.

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CHICAGO
343 S. Dearborn St.

Folded news	.70- .80
Mill wrappings	.70- .80
Mixed paper, No. 1	.50- .60
Common paper	.25- .35

Mechanical Pulp

Mechanical pulp is in a firm market position. For a time early in July it appeared as if the market would experience a sharp uptrend in prices since the situation as regards supplies seemed to be tightening up as a result of low water in mill streams and reservoirs in some districts of the country, but heavy rains helped out grinders and enabled them to resume production on a scale near to normal and thus kept them out of the open market as buyers. However, there are indications that no excess supply of ground wood is in the market. Producers are themselves consuming at a heavy rate and are conserving stocks against their own requirements, so that not a great deal of supply is reaching the transient trade. In fact, it is stated that consumers who depend on open market purchases to cover their wants are finding it necessary to buy most of their pulp at present from Canada as domestic grinders are offering such limited amounts of ground wood.

Quotations are maintained at around $30 per ton f.o.b. grinding plants in the United States, with Canadian producers quoting $28 to $32 a ton at shipping points, prices depending in large measure on the air-dry test and the freight to consuming centers. Ground wood imported from Scandinavia is quoted at about $34 or $35 a ton ex dock New York or other American Atlantic ports.

The last monthly statistical report issued on wood pulp shows that production of ground wood in the U. S. during June totaled 97,183 net tons, against 115,659 tons in May, while stocks on hand at mills at the end of June aggregated 189,707 tons, compared with 187,036 tons at the end of the preceding month.

Chemical Pulp

Reports tell of a fairly good demand for most grades of chemical wood pulp, and it is stated that pulp mills in the United States are well engaged and have enough business booked to keep them moderately busy for some time to come, or at least during the balance of this year. Consumers, it would seem, have contracted rather heavily on pulp, presumably feeling they will be unable to buy at any more advantageous prices during the rest of this year and therefore covering the bulk of their forward requirements. Prices are quite steady and are, in fact, marked by much firmness of tone. Little or no price cutting is being resorted to by manufacturers, it is reported, principally because there is no logic for such action, since most producers are well supplied with orders and since they realize fully a down trend in prices would doubtless hurt their market instead of benefiting it.

Bleached sulphite is quoted firmly, with 3.87½ cents a pound at pulp mills about the minimum price quoted on No. 1 quality sulphite for bond paper manufacture, and up to 4.25 cents asked for some grades. Kraft is steady at 3 cents or thereabouts for No. 1 grade, and strong No. 1 unbleached sulphite is quoted at 2.75 to 3 cents, depending on quality. Easy bleaching sulphite is selling at 3 cents and slightly higher.

Total production of chemical pulp in the U. S. in June amounted to 94,275 tons of all grades, contrasted with 97,130 tons in May, according to the report of the American Paper and Pulp Association. Mill stocks at the end of June totaled 17,602 tons of chemical pulps, against 18,990 tons at the end of the preceding month.

F.o.b. pulp mill quotations are as follows:

Bleached sulphite	3.87½-4.25
Easy bleaching sulphite	3.00 -3.10
Unbleached sulphite, No. 1	2.75 -3.00
News grade sulphite	2.60 -2.75
Soda pulp, bleached	3.50 -3.75
Mitscherlich, unbleached	3.25 -3.75
Kraft, No. 1	2.85 -3.10
Screenings, refined	1.40 -1.60

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The uniformity of the product, the entire freedom from grit, dirt and other impurities make Crown Filler the highest grade of filler available to the paper manufacturer.

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Writing—	
White rag	15-40
White sulphite	11-30
Colored rag	15-40
Colored sulphite	10-30
Ledger—	
White rag	17-40
White sulphite	13-30
Colored sulphite	12-30
Colored rag	16-40
Bonds—	
White rag	16-40
White sulphite	9-30
Colored sulphite	9-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 7.50
Machine finished	6.00- 6.75
English finished	6.25- 7.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	9.00-15.00
Newsprint—	
Rolls, contract	3.50- ....
Rolls, transient	3.65- ....
Sheets	4.00- 4.25
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .75
No. 1 manila, 24x36	.70- .75
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	5.50- 6.25
No. 2 Kraft	4.75- 5.50
Boards—	**New York and Chicago**
Solid news	47.50-52.50
Straw	45.00-50.00
Plain chip	42.50-45.00
White coated chip	55.00-60.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Chemicals

(Continued from page 827)

Chief activity in papermaking chemicals at present consists of shipments on contracts and back orders. There is some spot demand, but it cuts no great figure in the trade, the market being characterized by midsummer conditions bordering onto quietness. Quotations are maintained generally with little or no selling pressure exerted, manufacturers and producers permitting the market to pursue its natural course for this period of the year.

Average quotations f.o.b. works are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	3.75- 4.25
Bleaching powder	1.90- 2.10
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	11.50-12.50
Caustic soda, spot delivery	3.10- 3.15
China clay, domestic washed	12.00-16.00
China clay, foreign	15.00-20.00
Rosin, grade E	6.60- 6.70
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38
Starch, papermakers', in bags	3.40- 3.70
Talc (ton)	16.00-18.00

Growth of Artificial Silk Industry

Increased attention is being paid by European paper trade periodicals to developments in the artificial silk or rayon industry. Bleached sulphite pulp is the raw material of artificial silk. The pulp is mercerized and pressed and then broken up into a light mass known as "crumbs." These crumbs are treated with carbon disulphide and dissolved in diluted sodium hydroxide solution to form a thick, sticky fluid called viscose. When this has been ripened and filtered it is ready for spinning. The viscose process was invented originally by Charles Frederick Cross, a noted British authority on cellulose. As will be understood from the foregoing, viscose is in reality a solution of cellulose.

In the manufacture of rayon or artificial silk, the viscose is forced through spinnerrets, which are metal plates pierced with fine holes, into a coagulating bath to form the characteristic filaments or yarn-like fibers. In an average yarn there are about 40 such filaments, which is equivalent to 1,400 cotton counts.

Combinations of wool and rayon are being used in the manufacture of women's wearing apparel, and in Great Britain the Nottingham lace manufacturers are using certain quantities of rayon in the manufacture of lace; it is also being used in the manufacture of shoe laces, rugs and carpets.

Periodicals have been established to serve as organs for the artificial silk industry. One of these, a German publication called Die Kunstseide, is quoted in a recent issue of Zellstoff und Papier on the estimated world's production of artificial silk in 1925. This is placed at 154,300,000 pounds, with the United States heading the list by a production of 50,000,000 pounds; Italy follows with 28,000,000 pounds, and Germany is third with an estimated production of 20,000,000 pounds. The production of Great Britain equals that of France, being put at 14,000,000 pounds. Belgium is expected to produce 9,000,000 pounds, and the Netherlands 7,000,000 pounds. Switzerland's estimated production is 6,000,000 pounds, and that of Austria 2,200,000 pounds; Czechoslovakia, 1,600,000 pounds; Poland, 1,200,000 pounds; Hungary, 300,000 pounds.

The growth of the artificial silk industry in the United States during the past five years has been quite phenomenal. In 1920 the annual production amounted to 8,000,000 pounds. In the following year it jumped to 15,000,000 pounds and increased by 10,000,000 pounds yearly until 1924, when the production stood at 37,719,600 pounds, as compared with 35,380,500 pounds in 1923. As stated, the estimates for 1925 place the production at 50,000,000 pounds. Other estimates predict this year's production to be no less than 90,000,000 pounds.

Jenssen Acid Tower Installations

Jenssen acid towers have been installed at the mills of the Marinette & Menominee Paper Company, Marinette, Wis., and at the Newfoundland Power & Paper Company, Ltd., Corner Brook, Newfoundland. New Jenssen tower systems are also being installed by the G. D. Jenssen Company, 200 Fifth avenue, New York, in the following named mills:

Price Brothers & Co., Ltd., River Bend, P. Q.; St. Maurice Lumber Company, Three Rivers, P. Q.; St. Lawrence Paper Mills, Ltd., Three Rivers, P. Q.; Minnesota & Ontario Paper Company, Kenora, Ont.

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EXPORTS

Domestic exports of paper of all kinds from the United States recorded a fair gain in value during May as compared with April, and also an increase over May last year, according to statistics issued by the Department of Commerce in Washington. Exports in May amounted in value to $2,223,072, contrasted with $2,105,921 in April last, and with $1,994,449 in May, 1924. Total exports of paper of all kinds during the 11 months ended last May amounted in value to $21,588,601, showing a slight decline from the shipments valued at $22,055,475 in the corresponding period a year ago.

Exports of newsprint paper in May amounted to 4,322,086 pounds, valued at $199,385, against 2,842,210 exported in the same month last year of a value of $140,293. The bulk of these exports in May last were to Cuba, shipments to that country totaling 2,799,139 pounds of a value of $126,396. The next largest shipments were to the Philippine Islands, amounting to 335,990 pounds of a value of $15,294.

Exports of uncoated book paper in May amounted to 1,698,159 pounds, valued at $200,593, compared with 1,356,764 pounds of a value of $162,315 shipped in the same month a year ago. The largest shipments in May last were to Cuba, 442,637 pounds, and to Canada, 247,431 pounds.

Foreign shipments of kraft paper from the U. S. in May were 89,260 pounds, valued at $7,938, and in addition 2,799,033 pounds of other wrapping paper of a value of $230,391. Writing paper exports in May amounted to 271,968 pounds, valued at $46,378, and of paper and straw board to 2,554,170 pounds, valued at $128,846.

IMPORTS

Wood Pulp

The imported wood pulp market continues firm—in fact, it might be said the tone is firm to an extreme; there is scarcely any such thing as selling pressure noted in any part of the trade; manufacturers abroad are maintaining quotations strongly and in some cases have advanced them, while everything points to an exceedingly bullish statistical position. Pulp mills in Scandinavia have but limited amounts of their product to sell for delivery over the balance of this year, and they are encountering an excellent demand from various sources—not only from American paper manufacturers, but from the various papermaking countries in Europe, and also from producers of artificial silk. The manufacture of artificial silk is becoming a very important industry, which is absorbing substantial supplies of bleached sulphite, and which is getting to be a considerable factor in the pulp market. Some estimates state that mills in Sweden have no more than about 20 per cent of their year's output of pulp to sell for the remainder of 1925, and it is also stated that a considerable volume of orders have been placed for pulp deliveries next year. This situation puts Scandinavian manufacturers in a more or less independent position and causes them to hold for firm prices. By way of example, figures sent by American Consul General C. I. Dawson at Stockholm to the Department of Commerce in Washington show that exports of wood pulp from Sweden during the first four months of this year totaled 240,726 metric tons, in contrast to 119,324 metric tons during the same period of 1924. Unofficial statistics indicate shipments to the United States amounted to 55,274 tons from Sweden in the first quarter of this year.

Imports into the United States during May amounted to 90,681 net tons of all kinds of chemical pulp, contrasted with 79,639 tons in April last and 73,969 tons in May, 1924. Imports of ground wood in May totaled 29,125 tons, against 19,411 tons in April last and 11,867 tons in May a year ago.

Probably the feature in the market as regards prices during the last few weeks hase been a stiffening of quotations on bleached sulphite. Importers in general have advanced prices of prime bleached sulphite of Scandinavian origin to a minimum of about 4.10 cents per pound ex-dock, New York. Some brands have been quoted at 4.25 cents and even as high as 4.50 cents, depending, of course, on the quality of the pulp concerned. Offers of this grade of pulp have been limited and importers declare it is no easy matter to secure sizable supplies abroad. German bleached sulphite is quoted around 4 cents ex-dock, New York, for No. 1 prime quality.

Kraft continues firm in price at about 3 cents on the dock at New York or other American Atlantic ports. It is possible to get some lots of prime kraft down to 2.90 cents, but this represents about the bottom of the market, whereas, special mill brands range in price up to 3.20 cents, ex-dock. Strong unbleached prime sulphite is quoted at 2.80 to 2.85 cents in a majority of cases, with the better qualities held for 2.90 and 3 cents. Prime easy bleaching sulphite is quoted 3 to 3.15 cents a pound ex-dock, New York, and ordinary unbleached Mitscherlich sulphite at around 2.70 cents. Imported ground wood of Scandinavian manufacture is priced at about $34 per ton ex-dock, New York.

Receipts at the port of New York in July and current market quotations ex-dock, New York, follow:

Bleached sulphite, No. 1	4.00- 4.50
Unbleached sulphite, strong, No. 1	2.80- 3.00
Unbleached sulphite, No. 2	2.60- 2.80
Easy bleaching sulphite	3.00- 3.15
Mitscherlich unbleached, genuine	3.00- 3.25
Mitscherlich unbleached, ordinary	2.65- 2.80
Kraft, standard Swedish	2.90- 3.20
Groundwood, per ton	33.00-35.00

E. M. Sergeant Co., 256 bales from Copenhagen, 324 Oslo, 1,200 Hernosand and 2,908 Gothenburg; Bulkley, Dunton & Co., 1,200 bales from Hernosand, 2,250 Gefle, 2,500 Sandarne and 2,620 Swedish ports; Johaneson, Wales & Sparre, 10,740 bales from Hernosand; Ira L. Beebe & Co., 1,241 bales from Hamburg and 3,775 Bremen; Castle & Overton, 1,940 bales from Hamburg and 815 Bremen; Scandinavian Pulp Agency, 1,250 bales from Bremen and 750 Sundsvall; Borregaard Co., 300 bales from Oslo; International Acceptance Bank, 1,579 bales from Rotterdam; National City Bank, 5,500 bales from Sundsvall, 4,000 Sandarne and 700 Hamburg; Tidewater Paper Mills Co., 12,036 bales ground wood from Liverpool, N. S.; Van Oppen & Co., 700 bales from Hamburg; W. Hartmann & Co., 800 bales from Hamburg; J. Andersen & Co., 2,430 bales from Greaker, 1,600 Swedish ports and 200 Hamburg; Buck, Kiaer & Co., 125 bales from Greaker; Merchants' National Bank of Baltimore, 500 bales from Greaker; Pagel, Horton & Co., 10,200 bales from Swedish ports; Lagerloef Trading Co., 226 bales from Kotka; J. F. Whitney & Co., 19,115 bales ground wood from Sheet Harbor, N. S.; Hartig Pulp Co., 2,000 bales from Hamburg; Price & Pierce, 250 bales from Gothenburg; Order, 1,600 bales from Oslo, 750 Gefle, 1,470 Gravosa and 5,836 Kotka.

Paper Stock

Various kinds of raw material for papermaking continue to arrive at New York and other American Atlantic ports in

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LONG DISTANCE CONVEYOR OF WATER AND PAPER STOCK IN PAPER AND PULP MILLS—Specially Adapted to Carry Sulphite, Ground Wood and "White Water"

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large amounts. Judging from the receipts through the port of New York in July, imports were near to a new high record last month, some exceptionally large shipments coming in. Especially were rag arrivals large, while big lots of old rope, bagging and other materials were received.

Importations of papermaking rags into the United States during May, according to official Government figures, totaled 33,630,833 pounds, and during the eleven months ended with May amounted to 537,995,450 pounds, compared with 388,-169,455 pounds imported in the same time a year ago. Imports of old bagging and old paper in May were 8,265,289 pounds, and for the eleven-month period 109,996,860 pounds, against 92,633,599 pounds in the corresponding time a year ago. Imports of old rope and miscellaneous paper stock in May were 6,701,454 pounds, and in the eleven months ended with May totaled 75,668,648 pounds, contrasted with 89,049,-046 pounds in the same period a year ago.

Imports of all kinds of papermaking stock through the port of New York in July, with names of consignees, compiled from manifests of steamers reaching that port during the month, were as follows:

Old Rope

Brown Bros. & Co., 1,479 coils and 663 bales; International Acceptance Bank, 122 bales and 519 coils; International Purchasing Co., 5 bales; Castle & Overton, 82 coils and 2 bales; Ellerman's Wilson Line, 59 coils; Darmstadt, Scott & Courtney, 2 bales; New York Trust Co., 108 bales and 16 coils; Bank of New York & Trust Co., 86 bales; W. Schall & Co., 26 bales; E. J. Keller Co., 573 bales; Order, 41 bales.

Old Bagging

A. W. Fenton, Inc., 23 bales; Brown Bros. & Co., 157 bales; G. M. Graves Co., 106 bales; E. J. Keller Co., 1,207 bales; Chemical National Bank, 165 bales; Goschens & Cunliffe, 63 bales; Stone Bros. Co., 145 bales; Second National Bank of Boston, 72 bales; Atterbury & McKelvey, 45 bales; British Bank of South America, 251 bales; Atterbury Bros., 205 bales; W. Schall & Co., 66 bales; Anglo-South American Trust Co., 218 bales; Order, 709 bales.

Rags

Katzenstein & Keene, 666 bales; Paul Berlowitz, 1,395 bales; E. J. Keller Co., 9,650 bales; Milton Snedeker Corp., 169 bales; Atterbury Bros., 780 bales; E. Gross & Co., 58 bales; L. H. Abenheimer, 138 bales; Castle & Overton, 491 bales; Stone Bros. Co., 195 bales; Maurice O'Meara Co., 97 bales; Rudolf Wolf, 54 bales; Daniel M. Hicks, Inc., 103 bales; Atlas Waste Mfg. Co., 60 bales; Lavin & Rosenberg, 6 bales; Victor Galaup, Inc., 77 bales; Darmstadt, Scott & Courtney, 162 bales; C. R. Spence & Co., 357 bales; George W. Millar & Co., 89 bales; American Wool Stock Co., 28 bales; Gustav Strauss, 10 bales; A. H. Searle, 160 bales; Atterbury & McKelvey, 89 bales; D. I. Murphy, Inc., 64 bales; J. M. Jaffee, 40 bales; R. F. Downing & Co., 97 bales; Murray Freighting Corp., 57 bales; Barrett Co., 117 bales; M. Murray, 14 bales; W. L. Crowe & Co., 40 bales; A. Hurst & Co., 46 bales; William Steck & Co., 165 bales; Albion Trading Co., 113 bales; Giatti Bros., 114 bales; G. Levi & Co., 200 bales; I. Abela & Co., 100 bales; B. A. Benoni, 120 bales; J. Cohen Son & Co., 26 bales; Ladenburg, Thalman & Co., 41 bales; Fidelity International Trust Co., 52 bales; Salomon Bros. & Co., 183 bales; S. Birkenstein & Sons, 284 bales; Bank of New York & Trust Co., 204 bales; Baring Bros. & Co., 90 bales; National City Bank, 804 bales; National City Bank of Cleveland, 383 bales; Philadelphia National Bank, 720 bales; Garfield National Bank, 166 bales; Irving Bank-Columbia Trust Co., 272 bales; Equitable Trust Co., 692 bales; National Bank of Commerce, 392 bales; Chemical National Bank, 349 bales; State Bank, 53 bales; First National Bank of Boston, 299 bales; International Acceptance Bank, 48 bales; Anglo-South American Trust Co., 278 bales; New York Trust Co., 359 bales; International Purchasing Co., 53 bales; A. W. Fenton, Inc., 4,707 bales; Brown Bros. & Co., 2,207 bales; W. Schall & Co., 133 bales; Goldman, Sachs & Co., 476 bales; Amsinck, Sonne & Co., 41 bales; Order, 5,643 bales.

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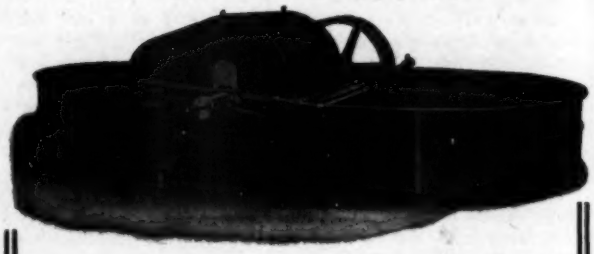

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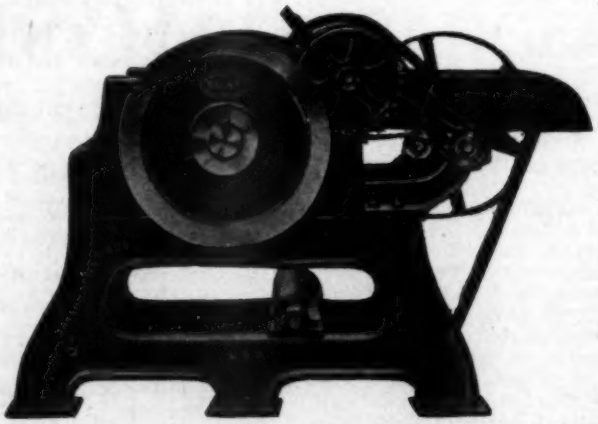

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Miscellaneous Paper Stock

Guaranty Trust Co., 140 bales; Brown Bros. & Co., 165 bales; R. M. Gray, Inc., 48 bales and 16 coils; Whaling Waste Products Co., 242 bales; National City Bank, 166 bales; Irving Bank-Columbia Trust Co., 48 bales; Equitable Trust Co., 115 bales; W. Schall & Co., 303 bales; New York Trust Co., 38 bales; E. Butterworth & Co., 81 bales; J. Cohen Son & Co., 67 bales; E. J. Keller Co., 567 bales; Order, 243 bales.

Paper

The United States imported paper on a fairliy large scale during July, taking the figures covering arrivals through the port of New York as a criterion. Some sizable lots of wrapping paper were received, and also fairly big shipments of printing paper. Imports of cigarette, filter, hanging and other kinds of paper were of good volume.

During May the United States imported paper of all kinds to the value of $10,088,947, comparing with $9,974,204 in April last and with $10,517,336 in May last year, according to Department of Commerce statistics. Imports of standard newsprint in May totaled 246,913,137 pounds, valued at $8,762,939, of which 218,183,391 pounds came from Canada, 13,343,327 pounds from Sweden, 5,700,671 pounds from Norway, and 4,321,331 pounds from Germany, contrasted with 226,523,317 pounds of a value of $8,516,141 imported in the same month of 1924. Imports of kraft wrapping in May amounted to 829,427 pounds, valued at $36,316, against 3,150,552 pounds of a value of $117,680 in May a year ago, and of other wrapping paper to 412,502 pounds, valued at $19,335, contrasted with 3,069,517 pounds of a value of $119,093 in May last year. Hanging paper imports in May were 284,435 pounds, valued at $32,603, against 644,502 pounds of a value of $33,728 in May, 1924. Imports of tissue paper in May were 277,692 pounds; of writing and drawing papers, 199,101 pounds; of cigarette paper, 866,223 pounds, and of photographic paper, 391,302 pounds.

Imports of paper of all kinds through the port of New York in July follow, these data being taken from the manifests of vessels arriving at that port during the month:

Printing

J. P. Heffernan Paper Co., 8 bales from Rotterdam, 296 bales from Trieste and 97 bales from Gravosa; Martin & Bechtold, 15 cs. from Bremen; Titan Shipping Co., 62 cs. from Southampton; Norwegian Paper Mills Agency, 579 rolls from Oslo; C. Steiner, 11 cs. from Rotterdam; P. C. Zuhlke, 147 cs. from Antwerp and 6 cs. from Rotterdam; Milton Paper Co., 35 cs. from Antwerp; B. F. Drakenfeld & Co., 50 cs. from Liverpool; Irving Bank-Columbia Trust Co., 651 rolls from Hamburg; W. Hartmann & Co., 74 bls. from Hamburg; C. A. Johnson & Co., 38 pkgs. from Liverpool; Periodico Patria, 28 bls. from Gravosa; Oxford University Press, 21 cs. from Liverpool; Perkins-Goodwin Co., 20 bls. from Gravosa; Chemical National Bank, 254 rolls from Hamburg; Maurice O'Meara Co., 10 cs. from Kotka; Parsons & Whittemore, 691 rolls from Bremen and 168 rolls from Raumo; M. Gottesman & Co., 218 rolls from Gothenburg; Order, 15 bls. from Gravosa, 263 rolls from Raumo and 2,615 rolls from Kotka.

Wrapping

F. C. Strype, 24 cs. from Rotterdam and 33 cs. and 9 rolls from Antwerp; P. W. Schroeder, 174 rolls from Hamburg; British-American Tobacco Co., 85 rolls from Antwerp; A. Fink & Sons, 13 bls. from Antwerp; Robert Hoe & Co., 3 bls. from London; Judd Paper Co., 27 bls. from Gothenburg; C. K. MacAlpine & Co., 447 rolls and 208 bls. from Gothenburg; Irving Bank-Columbia Trust Co., 44 rolls from Gothenburg; Arkell Safety Bag Co., 539 rolls from Gothenburg; D. S. Walton & Co., 613 rolls and 72 bls. from Gothenburg; Borregaard Co., 11 bls. and 1,303 rolls from Gothenburg; Maurice O'Meara Co., 113 bls. from Gothenburg and 244 bls. from Sundsvall; Wilkinson Bros. & Co., 106 rolls from Gothenburg; Hope Paper Co., 23 rolls from Gothenburg; International Forwarding Co., 19 cs. from Hamburg; W. Hartmann & Co., 100 bls. from Trieste; W. Schall & Co., 132 bls. from Hamburg; E. Dietzgen & Co., 25 cs. from Hamburg; J. P. Heffernan Paper Co., 492 bls. from Hamburg and 1,040 bls. from Gothenburg; Fidelity International Trust Co., 281 rolls from Ham-

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LOCKPORT FELT CO., Newfane, N. Y.

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Digesters
Diffusers
Incinerators
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THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich.

INTERNATIONAL TRADING CO., Philadelphia, Pa.

burg; Blauvelt-Wiley Paper Mfg. Co., 80 bls. from Glasgow; Robert Wilson Paper Corp., 34 cs. from Glasgow; Goldsmith & Co., 150 bls. from Gothenburg; J. A. Roeblings Sons Co., 67 rolls from Glasgow; Chemical National Bank, 34 cs. from Glasgow; Chatham & Phenix National Bank, 22 rolls from Gothenburg; Order, 3 cs. from Bremen, 57 rolls Hamburg, 14 bls. Antwerp, 12 bls. Genoa and 23 rolls Gothenburg.

Cigarette

Standard Products Corp., 326 cs. from Havre and 30 cs. from Southampton; P. J. Schweitzer, 203 cs. from Marseilles and 60 cs. from Havre; S. Alexandre, 3 cs. from Havre; M. Spiegel & Sons, 5 cs. from Havre; R. J. Reynolds Tobacco Co., 1,220 cs. from St. Nazaire; De Manduit Paper Corp., 155 cs. from St. Nazaire; F. P. Gaskell & Co., 86 cs. from Havre; Sarburg Co., 22 cs. from Havre; Zorro Tobacco Co., 25 cs. from Liverpool.

Writing

P. Puttmann, 4 cs. from Havre; Eleto Co., 7 cs. from Southampton; Globe Shipping Co., 9 cs. from Rotterdam; Guibont Freres & Co., 8 cs. from Havre.

Drawing

E. Dietzgen & Co., 3 cs. from Hamburg and 3 cs. from London; Keuffel & Esser Co., 6 cs. from Rotterdam, 5 cs. London, 178 cs. Hamburg and 5 cs. Marseilles.

Filter

H. Reeve Angel & Co., 32 cs. from London; J. Manheimer, 184 pkgs. from Bordeaux; Zinkeisen & Co., 3 cs. from Hamburg; Franco-American Import Co., 15 cs. from Southampton.

Tissue

Iwai & Co., 13 cs. from Kobe; Wilkinson Bros. & Co., 22 cs. from Genoa; Baldwin Universal Co., 6 cs. from Liverpool; Meadows, Wye & Co., 11 pkgs. from Liverpool; F. C. Strype, 19 cs. from Liverpool; Order, 10 bls. from Bremen.

Photo

Globe Shipping Co., 186 cs. from Bremen; Gevaert Co. of America, 33 cs. from Antwerp; P. C. Zuhlke, 27 cs. from Antwerp; P. Puttmann, 26 cs. from Antwerp; J. J. Gavin & Co., 7 cs. from Liverpool; Order, 10 cs. from Antwerp.

Hanging

A. C. Dodman, Jr., & Co., 9 cs. from Antwerp and 14 pkgs. from London; W. H. S. Lloyd & Co., 12 bls. from Liverpool; C. A. Haynes & Co., 107 bls. from London; Globe Shipping Co., 6 cs. from Havre; Janeway & Carpenter, 543 bls. from Antwerp; F. J. Emmerich & Co., 5 bls. from Hamburg and 12 cs. from Liverpool; Order, 81 rolls from Kotka.

Board

Bendix Paper Co., 128 cs. from Hamburg; Metropolitan Import & Mfg. Co., 103 cs. from Hamburg; Adrian Vuyck, 852 rolls from Rotterdam; J. P. Heffernan Paper Co., 65 bls. from Trieste; H. H. Ayer, 5 cs. from Havre; Parsons & Whittemore, 196 bls. from Raumo; H. L. Dodge & Co., 54 bls. from Hamburg; Order, 20 bls. from Raumo and 180 rolls from Rotterdam.

Miscellaneous

Japan Paper Co., 24 cs. from Havre; Dupont Cellophane Co., 7 cs. from Havre; Coenca-Morrison Co., 17 cs. from Havre; Gallagher & Ascher, 4 cs. from Havre; Bernard, Judae & Co., 7 cs. from Gothenburg; Guibont Freres & Co., 14 cs. from Havre; Judson Freight Forwarding Co., 6 cs. from Havre; P. H. Petry & Co., 9 cs. from Hamburg, 12 cs. Rotterdam and 14 pkgs. Havre; Overton & Co., 8 cs. from Bremen; Whiting-Patterson Co., 3 cs. from London; Hensel, Bruckman & Lorbacher, 19 cs. from Rotterdam; Rubberoid Co., 77 rolls from Rotterdam; Borden & Riley Paper Co., 10 cs. from Antwerp; C. H. Boulin, 40 cs. from Havre; International Forwarding Co., 25 cs. from Havre, 85 cs. Hamburg and 4 cs. Antwerp; Lagerloef Trading Co., 948 bls. and 329 rolls from

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
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Starch

Try Hercules Rosin

IF YOU are not already using Hercules Wood Rosin for your paper size, you may find it profitable to compare its quality and suitability with any other rosin on the market.

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DANDY ROLLS

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Automatic Steam Regulator
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Which absolutely control the drying of the sheet. Installed on sixty days' trial

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OF THE
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ALSO SPECIALIZE IN
Acid Resisting Digester Parts

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(Best phosphorised Cast Metal)

Old Plates RECLOSED and RECUT to accurate gauge
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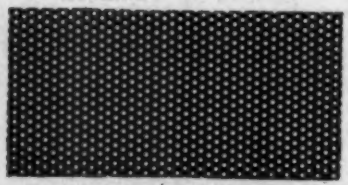
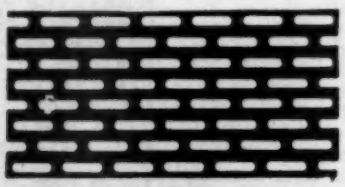
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

The Witham Screen Plate Fastener, Patented
THE ORIGINAL THE BEST

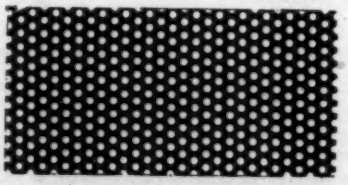
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



⅛ x ⅜" Slots



3/32 inch round

Steel, Copper, Brass, Bronze and other alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS 57-65 Fairmount Avenue, Jersey City, N. J.

Hamburg; F. L. Kraemer & Co., 6 cs. from London; Fuchs & Lang Mfg. Co., 12 cs. from Hong Kong; F. & R. Trading Co., 353 bls. from Antwerp; Globe Shipping Co., 11 cs. from Rotterdam; Titan Shipping Co., 9 cs. from Havre; H. Reeve Angel & Co., 8 cs. from Yokohama; J. C. Robold & Co., 6 cs. from Hamburg; Devoe & Raynolds Co., 7 cs. from Havre; Sternberg & Co., 24 cs. from Marseilles; A. Flinn & Co., 7 pkgs. from Havre.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 15612—Cardboard, faced, colored. Montreal, Canada. Purchase desired.

No. 15683—Old newspapers. Bombay, India. Agency desired.

No. 15610—Paper, supercalendered. Bombay, India. Purchase desired.

No. 15690—Paper and stationery. Chalai, India. Purchase and agency desired.

No. 15682—Writing paper. Ghent, Belgium. Purchase desired.

No. 15697—Writing, packing and other papers. Beirut, Syria. Agency desired.

No. 15775—Containers, paraffin paper, for orange juice, 200,000. Montreal, Canada. Purchase desired.

No. 15695—Filter paper. The Hague, Netherlands. Agency desired.

No. 15774—Glassine paper, in 5-ton lots. Yokohama, Japan. Purchase desired.

No. 15870—Machinery for making set-up cardboard boxes and other box-making machines. Sao Paulo, Brazil. Purchase desired.

No. 15976—Boxes, cardboard, for toilet articles. Durango, Mexico. Purchase desired.

No. 15972—Paper, bronze impression and gold-leaf impression folios in rolls. Nuremberg, Germany. Purchase desired.

No. 15981—Fiber and artificial leather for the manufacture of sample and suit cases, etc. Johannesburg, South Africa. Purchase desired.

Industrial Cafeterias

That a hot lunch in the middle of the day, with soup, meat and potatoes and dessert, is conducive to better work in the afternoon, is the opinion of all employers questioned by the Policyholders' Service Bureau of the Metropolitan Life Insurance Company in the preparation of a report, "Lunch Rooms for Employes," just published by the bureau for the benefit of the company's group insurance policyholders.

Such lunches are now being served to employes by more than four thousand companies in the United States and Canada, the report states.

Such questions as the kind of room required, necessary equipment, menus, analysis of costs, methods of controlling materials and expenses are covered in the report, copies of which may be had without obligation from the Policyholders' Service Bureau of the Metropolitan Life Insurance Co., New York.

Royal S. Kellogg, secretary of the News Print Service Bureau, is spending a vacation period in visiting pulp and paper mills here and in Canada. He drives his own machine and is accompanied by Mrs. Kellogg. After a stay of a few weeks in Wisconsin and other northwestern parts, he motored to Canada and was last heard from at Grand Mere, P. Q., at the mills of the Laurentide Company, after a visit to Corner Brook, Newfoundland, where he saw the first reel of newsprint paper to be turned out at the new plant of the Newfoundland Power & Paper Co., of which John Stadler is general manager.

Hungerford Filters
for
Clear Water

Hungerford Softening Filters
for
Soft Water

Hungerford & Terry, Inc.
Clayton, N. J.

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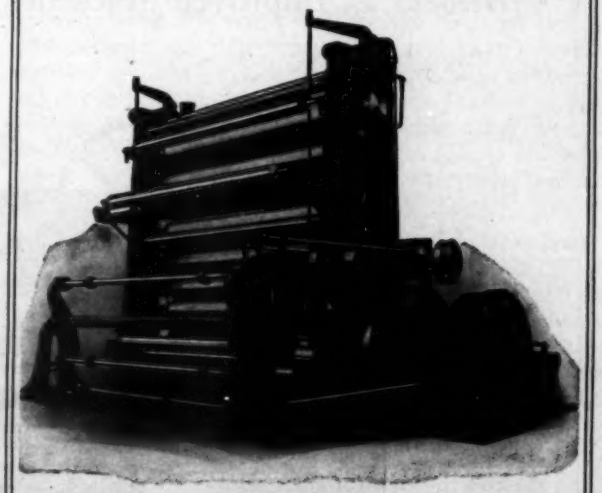
SUPER CALENDERS



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Paper Finishing Machinery

NORWOOD ENGINEERING CO.
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GLOBE and CYLINDER

ROTARY BLEACHING BOILERS

for Years of Dependable Cooking and Bleaching

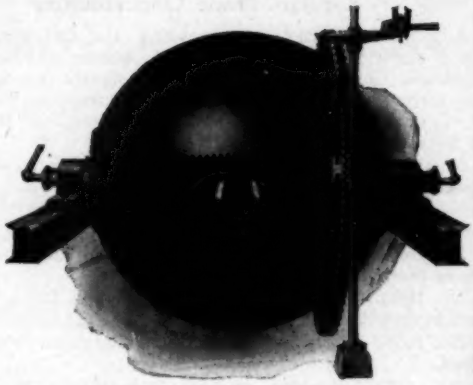
BIGGS BOILERS, built for every hard condition met with in paper mill operation, have an inbuilt factor of safety and margin of resistance to corrosion that carry them through years of continuous bleaching and cooking of paper stocks.

If you want long trouble-free service of this kind, get in touch with Biggs.

The Biggs Boiler Works Company

Seneca Place and Case Avenue AKRON, OHIO

Eastern Representative, Mr. Grenville A. Harris, 15 Park Row, New York City



Globe and Cylinder Rotary Bleaching Boilers, Digesters, Riveted Steel Tanks, Flumes, Smokestacks, Penstocks, General Steel Plate Construction of every description.

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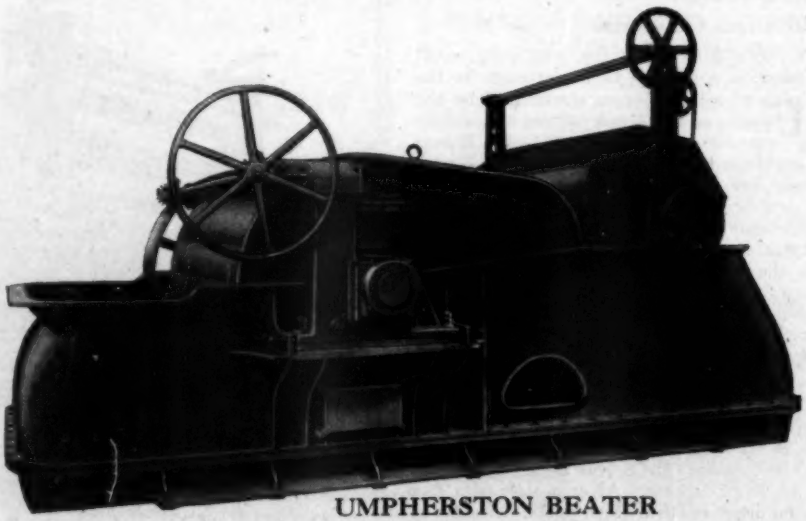
Makers of Improved Machinery for Wood Pulp and Paper Mills



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Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors, Super-Calenders, Platers, Cotton and Paper Rolls.